REPORT RESUMES

ED 019 226 24 SE 003 856

WILMINGTON OPERATIONAL MATHEMATICS PROGRAM.

BY- ROGLER, PAUL V.

WILMINGTON PUBLIC SCHOOLS, DEL.

REPORT NUMBER BR-6-8786

EDRS PRICE MF-$0.75 HC-$6.84 169P.

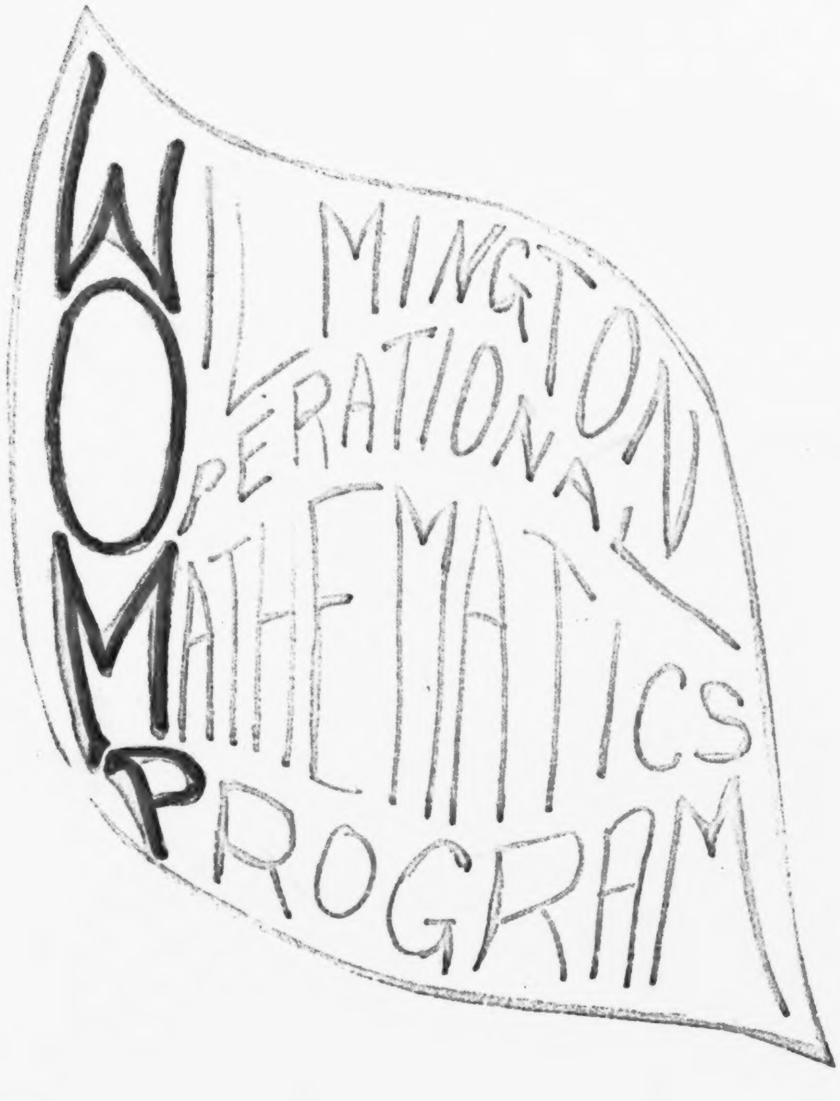
DESCRIPTORS- *CURRICULUM, *CURRICULUM DEVELOPMENT, *MATHEMATICS, *SECONDARY SCHOOL MATHEMATICS, ALGEBRA, GRADE 9, GEOMETRY, WILMINGTON PUBLIC SCHOOLS, WILMINGTON, DELAWARE,

THIS PROJECT PROVIDES A PROGRAM FOR THE EDUCATION OF NINTH GRADE STUDENTS IN GENERAL MATHEMATICS. THE PURPOSE OF THE PROJECT IS (1) TO WRITE UNITS OF WORK THAT INCORPORATE PRACTICAL APPLICATIONS FROM THE EVENTS AND AFFAIRS OF URBAN LIFE, (2) TO SEEK OUT PROBLEMS FROM LOCAL INDUSTRY, AND (3) TO PROVIDE DIFFERENTIATED ACTIVITIES AND EXERCISES THAT APPEAL TO THE INTERESTS AND ABILITIES OF THE VARIETY OF STUDENTS THAT ARE FOUND IN NINTH GRADE GENERAL MATHEMATICS CLASSES. TO ACCOMPLISH THESE OBJECTIVES, THE DIRECTOR AND THREE TEACHERS WORKED TOGETHER FOR SIX WEEKS, WRITING UNITS ON (1) CARPENTRY, (2) MATHEMATICS IN SPORTS, (3) SCIENCE, (4) WORLD OF WORK, (5) PRACTICAL NURSING, (6) BUSINESS EXPERIENCE, (7) GEOMETRY, (8) SETS AND PROBABILITY, (9) A MODERN FACTORY, (10) TRAVEL, AND (11) ALGEBRA. EACH STUDENT IS PROVIDED WITH SUFFICIENT BASIC MATERIALS FOR USE AS NEEDED. TEACHERS' COPIES OF THE PROGRAM PROVIDE MANY TEACHING SUGGESTIONS AND A NUMBER OF TRANSPARENCIES FOR USE WITH THE UNITS. MATERIALS WERE PROVIDED FOR FIVE EXPERIMENTAL CLASSES AND ARE PRESENTLY IN USE. THE FIVE TEACHERS WHO ARE USING THE MATERIALS ARE MEETING PERIODICALLY DURING THE SCHOOL YEAR TO EVALUATE AND REWRITE THE UNITS AS NECESSARY. (RP)

ED019226

WOMP

SE003 856


WILMINGTON
OPERATIONAL
MATHEMATICS
PROGRAM

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

WILMINGTON
OPERATIONAL
MATHEMATICS
PROGRAM

by

Paul V. Rogler, Director
Arthur Gibson
Muriel Rains
Raymond Wilson

This program is the result of work under a grant from the U. S. Office of Education; Department of Health, Education, and Welfare by authority of the Cooperation Research Act.

Wilmington Public Schools
Wilmington, Delaware

TABLE OF CONTENTS

Order of Unit	Title of Unit	Code Letters of Unit
1.	Carpentry	CA
2.	Math in Sports	MS
3.	Science	SC
4.	World of Work	WW
5.	Practical Nursing	PN
6.	Business Experience and You	BE
7.	Geometry	GE
8.	Sets and Probability	SP
9.	A Modern Factory	MF
10.	Travel	TR
11.	Algebra is Fun	AF

Carpentry Unit Teacher Suggestions

This unit is planned as an introductory one to help the teacher acquaint himself with his students' abilities with regard to simple operations with whole numbers and fractions, and with simple measurements and scale drawing.

The teacher should have a number of tools on hand on a table in the classroom. Suggested tools are:

Standard Steel Square 16" x 24"
Steel measuring tape 6'
Steel measuring tape 50'
Variety of sizes of nails and screws
Variety of sizes of drill bits
Carpenters folding rule

Boards: 1" x 10" x 3'; 1" x 1' x 1'
$\frac{1}{4}$" plywood, 1' x 1'; $\frac{1}{2}$" plywood, 1' x 1'; $\frac{3}{8}$" plywood, 1' x 1'

1' plastic ruler, $\frac{1}{16}$", for overhead projector

35-1' rulers, $\frac{1}{16}$", for student use

1 piece of $\frac{1}{4}$ round, 3' long.

Activities for first day:

Discuss what a carpenter does with his tools.
Discuss the need to be able to work with fractions when using drill bits.
Distribute student rulers and review the use of the ruler.
Have each student measure some objects (desk, window, door, file cabinet)

Make a chart of measurements on the board. Discuss differences in measurements; show that all measurement is approximate--you must decide on smallest unit you want to work with and read measurement to the closest unit.

Have students guess each other's height, then measure against a wall or door frame.

Explain "estimating." Someone has called it "an educated guess."

Put one nail at a time on overhead projector. Have a student guess at its length and then measure it with a plastic ruler.

Discuss ordering of a group of fractional numbers, first using just halves, then quarters, then eighths, then sixteenths.

Review addition and subtraction of ruler fractions. Show how to check the sum on a ruler.

Several students may be asked to measure the same object in the classroom. Permit different conclusions and explain that this is natural because measurement is approximate. There is a need for agreement. "Rounding numbers" helps to bring agreement.

Have some students go to the board to add some of the lengths that have been measured (find perimeter of desk, or of room).

Start worksheet #1 in class. Do at least problems #3A. amd 4 (A+B) to show what needs to be done. Finish at home.

Answers:

#2: $a=3\frac{3}{4}''$; $b=\frac{13}{16}''$; $c=1\frac{1}{2}''$; $d=\frac{1}{2}''$; $e=3\frac{3}{16}''$; $f=3\frac{9}{16}''$; $g=2\frac{1}{4}''$; $h=1\frac{1}{4}''$

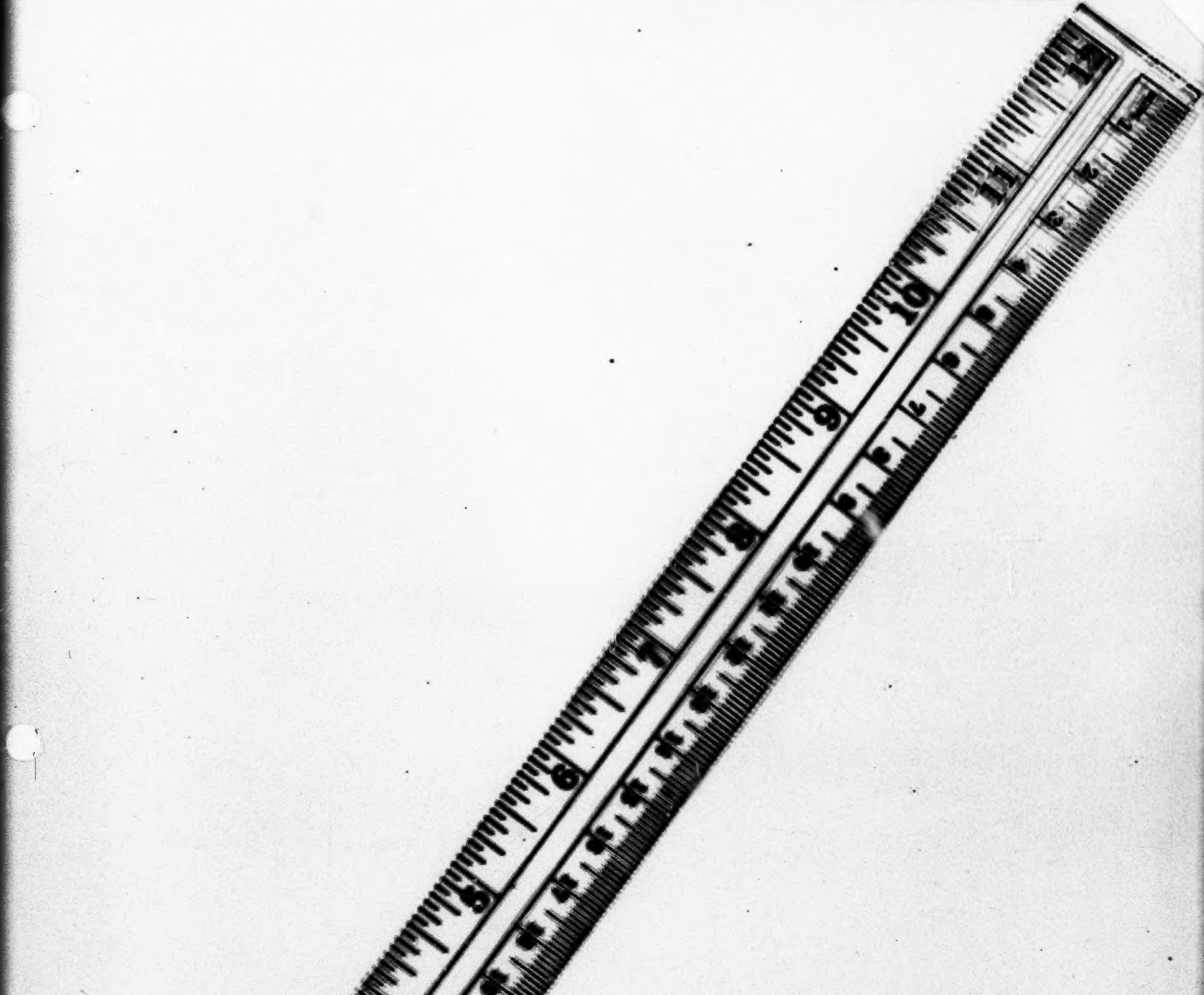
#3: $A=\frac{3}{4}''$; $B=\frac{5}{8}''$; $C=\frac{5}{16}''$

#4: $A+B=1\frac{3}{8}''$; $B+C=\frac{15}{16}''$; $A+B+C=1\frac{11}{16}''$; $A+C=1\frac{1}{16}''$

#5: for A+B+C use nail c ($1\frac{1}{2}''$)

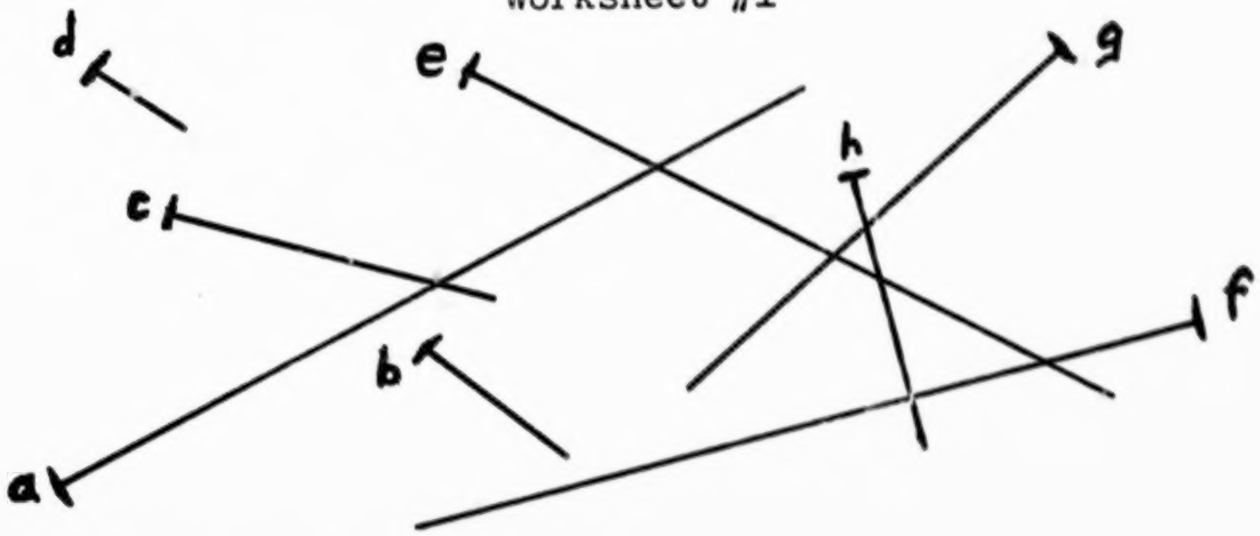
For A+B use nail h ($1\frac{1}{4}''$)

For A+C use nail b ($\frac{13}{16}''$)


1
2
3
4
5
6
7
8
9
10
11
12

Name Section, Date

Worksheet #1

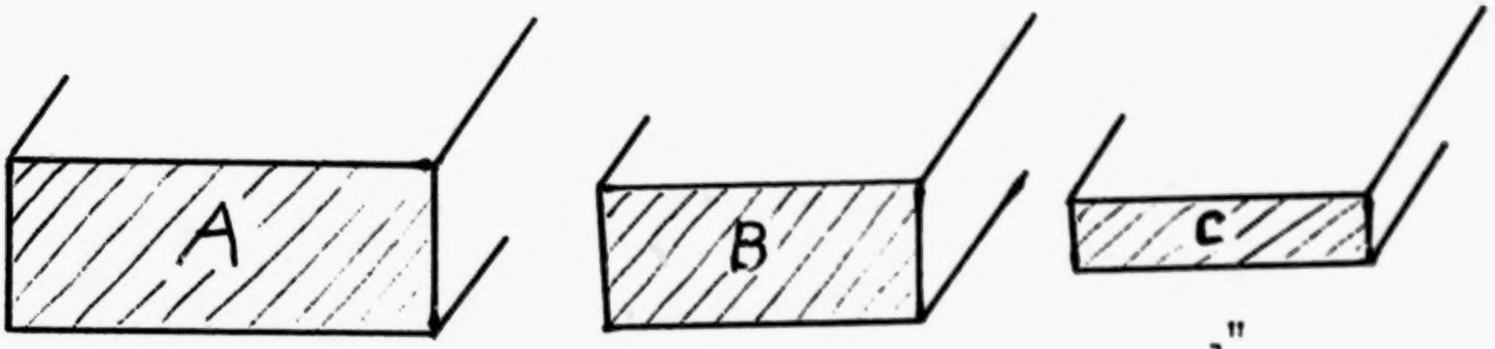


The above is a pile of nails of different lengths.

1. Without measuring, see if you can arrange them in order from small to large:________,________,________,
________,________,________,________,________.

2. Now measure each nail carefully to $\frac{1}{16}$" with a ruler.

Put these lengths in order from small to large. Compare with your estimates.



These are board ends. Measure the thickness of each to $\frac{1}{16}$" inch.

3. A=________; B=________; C=________.

4. Find the total measurements: A+B=________; B+C=________;
A+B+C=________; A+C=________.

5. If a nail, used to hold 2 or 3 boards together, should be about $\frac{1}{8}$" less than the total thickness, what nail in the pile would you use to hold together A+B+C________, A+B______,
A+C________.

Name   Section   Date

Worksheet #2

Teacher Suggestions

1. Explain the need for "rounding numbers."
2. Show how to measure to $\frac{1}{4}''$ taking advantage of the $\frac{1}{8}''$ mark on a ruler.
3. What "rule" for rounding numbers can be devised? Is there a disadvantage to rounding up all the time?
4. Show how large numbers can be rounded as well as small numbers, or fractions. This might be a place to review the decimal number system.
5. Check here on the ability of the students to add whole numbers.

Answers: Worksheet 2A

1. a) 1"   b) $1\frac{1}{2}''$ c) $1\frac{3}{4}''$
   d) 2"   e) $1\frac{3}{4}''$ f) $3\frac{1}{2}''$

2. a) 1"   b) $1\frac{3}{8}''$ c) $1\frac{3}{4}''$
   d) 2"   e) $1\frac{3}{4}''$ f) $3\frac{3}{8}''$

3. Sums:

   412064; 41200; 412000

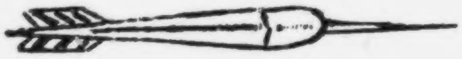
Answers: Worksheet 2B

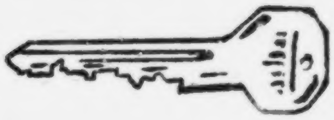
1. straw: $6\frac{15}{16}''$
   pencil: $5\frac{5}{16}''$

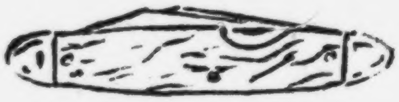
Name Section Date

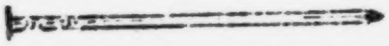
Worksheet #2A

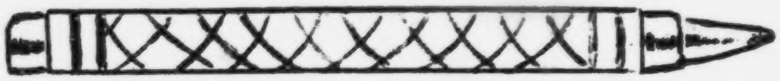
1. (a)

(d) 

(b) 

(e) 

(c) 

(f) 

Measure the length of each one to $\frac{1''}{4}$.

1. (a)________ (b)________ (c)________
(d)________ (e)________ (f)________

What use did you make of the $\frac{1''}{8}$ marking on your ruler?

What do you do when a point falls right on the $\frac{1''}{8}$ marking, but you want your answer to the nearest $\frac{1''}{4}$?

2. Measure each one to the nearest $\frac{1''}{8}$.

(a)________ (b)________ (c)________
(d)________ (e)________ (f)________

3. Large numbers can be rounded, too. Find the sum of the figures at the right. Now on separate paper round each number to hundreds. Add these numbers. Again, round to thousands Add these numbers. Compare the results.

178,452
26,345
182,509
6,507
18,251

When is "rounding numbers" a good thing?

Name Section Date

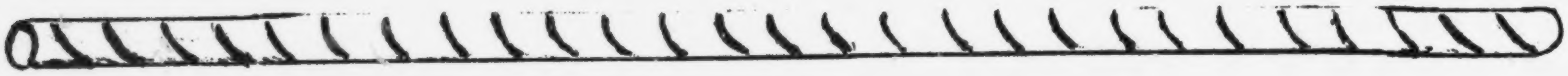
Worksheet #2B

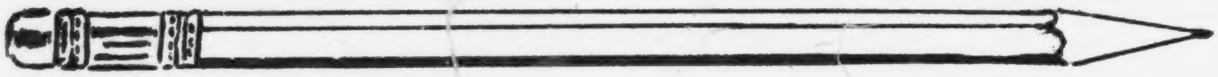
Materials:

1. Ruler - Pencil - Paper

Exercises:

1. Use your ruler to measure these objects.





2. Draw segments of the following lengths.

a) 7 in. b) $5\frac{1''}{2}$ in. c) $\frac{3''}{4}$ in.

3. Measure the width of your desk top. ________
4. Measure the length of your desk top. ________
5. What is the Area of your desk top? ________
(Hint: Area = Length x Width

Worksheet #3

Teacher Suggestions

Planning a bookcase

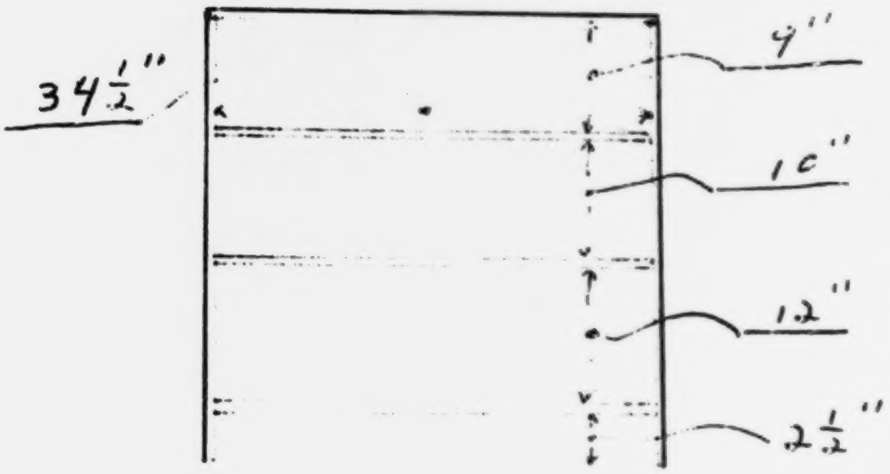
Introduction:

1. Review operations with fractions
2. Discussion
   a. Bookcase--spacing (freehand drawing on board)
   b. Show how you would indicate length, width and thickness.
3. Draw a line segment on the board. Show how 12", 10", and 8" might be represented in less than 30" space.
   (12 $\frac{1}{2}$" units; 10 $\frac{1}{2}$" units; and 8 $\frac{1}{2}$" units: Total of 15")
4. Vocabulary:
   a. Maximum
   b. Minimum
   c. Thickness

Answers:

1. a) 76 books
   b) 30"

2. a)



3. 46 books
4. 27 books

Name Section Date

Worksheet #3

1. Books to be put in bookcase.

   20 books--11" high, $1\frac{1}{4}''$ thick

   26 books-- 9" high, $\frac{3}{4}''$ thick

   30 books--between 6-8 inches high, up to 1" thick.

   a. How many books in all?______

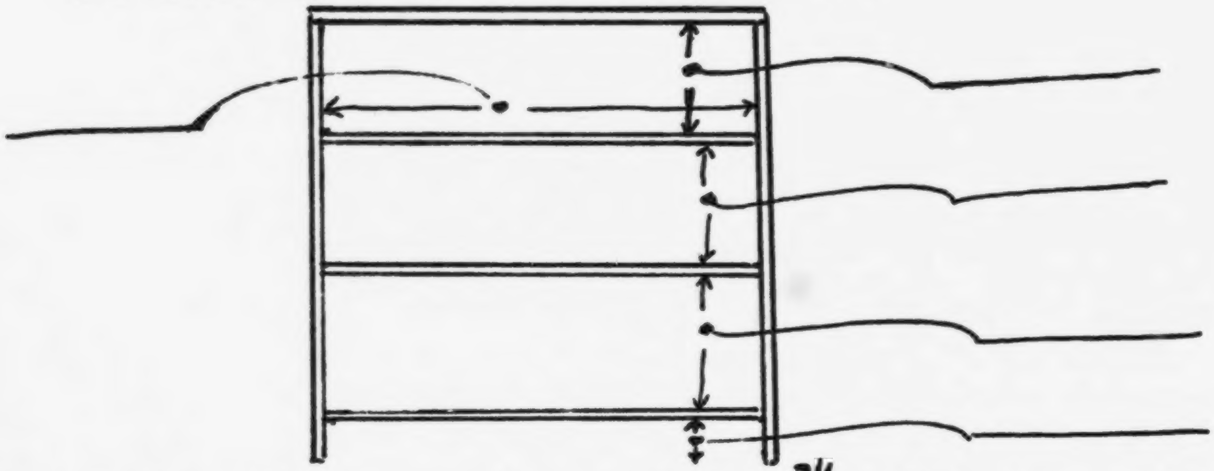
   We will use a separate shelf for each set of books.

   b. What is the minimum length required for each of the three shelves? __________

2. Lumber for shelving is $\frac{3}{4}''$ thick and $9\frac{1}{4}''$ wide.

   (This is called 1" x 10" lumber)

   a. Put dimensions on the drawing to make it measure 3' x 3'
   Use shelf spacing of 12" x 10" x 9".



3. What is the maximum number of books $\frac{3}{4}''$ thick that can be placed on the middle shelf?_____________

4. What is the maximum number of books $1\frac{1}{4}''$ thick that can be placed on the bottom shelf?_____________

Worksheet #4

Teacher Suggestions

Scale Drawing:

1. Review (if needed)

   Addition
Subtraction of fractions

2. Introduction:

   a. Need, use, etc. of a scale.

   b. Have students suggest some appropriate scales.

      1. List them on the board.
      2. Use better suggestions for illustrations.
      3. One simple scale would be 1" on graph to represent 8" on the bookcase.

   c. Discussion

      1. Planning work
      2. Scale
      3. Ratio and proportion as shown on a scale drawing.
      4. More advanced students might want to discuss use of perspective to make more descriptive drawing.
      5. Shelf thickness can be approximate.

Name Section Date

Worksheet #4

Exercise:

1. Draw a scale drawing from the rough drawing of worksheet #3. (3' x 3' bookcase)

Worksheet #5

Teacher Suggestions

After a short discussion of estimating amount of lumber needed this worksheet can be used to show more exact computations.

Cost of each type plywood per sq. ft. when bought as a 4' x 8' and as a 4' x 4' might be computed.

Discussion of which plywood is thicker might lead to some problems about arranging a group of fractions according to size. Amount of waste might be computed.

Cost of nails and glue might also be considered.

Answer for Worksheet 5

1. 6 pieces of 1" x 10" lumber 36" long.
2. 3 lengths
3. Plywood needed is 3' x 3'
4. This is 9 sq. ft.
5. We need to buy a 4' x 4' sheet

Costs:

1 x 10 lumber: 18' @ $.36 per ft. is	$6.48
$\frac{3}{8}$" plywood: 1 - 4 x 4 sheet @ $2.40	2.40
Total Cost	8.88

Name Section Date

Worksheet #5

1. What lumber is needed for the bookcase?

   ________pieces of 1" x 10" lumber ________" long?

2. If the lumber comes in 6' lengths, how many do we need?

3. To the nearest foot, what size piece of plywood is needed?

4. What is the area in square feet of the plywood needed?

5. If plywood can be bought only in 4' x 8' or 4' x 4' sizes, which do we need?

1" x 10" lumber for book shelves costs $.36 per foot.

Plywood costs by Thickness		
Thickness	**4' x 8' sheet**	**4' x 4' sheet**
$\frac{1}{4}$"	$ 3.20	$1.76
$\frac{3}{8}$"	4.48	2.40
$\frac{1}{2}$"	5.44	3.04

Figure cost of materials:

Item	Amount	Unit Cost	Total Cost
1" x 10" lumber			
$\frac{3}{8}$" plywood			
Total Cost of Materials			

Worksheet #6

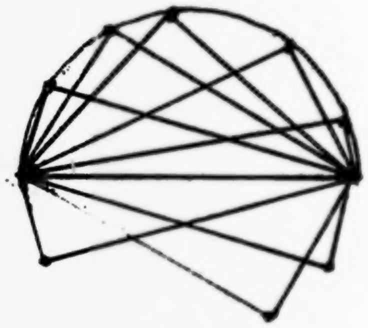
Teacher Suggestions

Students should check right angle part of their squares before stapling. Outer edges should measure 5" x 6".

Student square can be used to check various square corners in a room.

Other uses of a square (extras for better students)

Making a circle--draw a diameter and then, using the fact that an angle inscribed in a semi circle is always a right angle--draw a number of dots to make the circle.



Finding a 30° and 60° angle: Lay out a right triangle with one side 2". The hypotenuse should be 4" and acute angles are 30° and 60°.

A 45° angle can be made by drawing any isosceles right triangle.

A right angle can be made easily without a square by folding a sheet of paper once, and then once again along the folded edge.

Worksheet #6A

Carpenters' Square

Steel Square--modern tool with which one can construct almost anything using it as the only ruler: easy, quick tool for doing many jobs about the home. (The Square, refers to the Stanley Steel Square No. R 100. It has two major parts: body blade, and tongue blade.)

body blade--longer, wider part 24" x 2"

tongue blade--shorter, narrower part 16" x $1\frac{1}{4}$"

angle--figure formed by 2 intersecting lines, usually measured by degrees.

Length

12 inches=1 foot

3 feet=1 yard

5280 feet =1 mile

36 inches=lyard

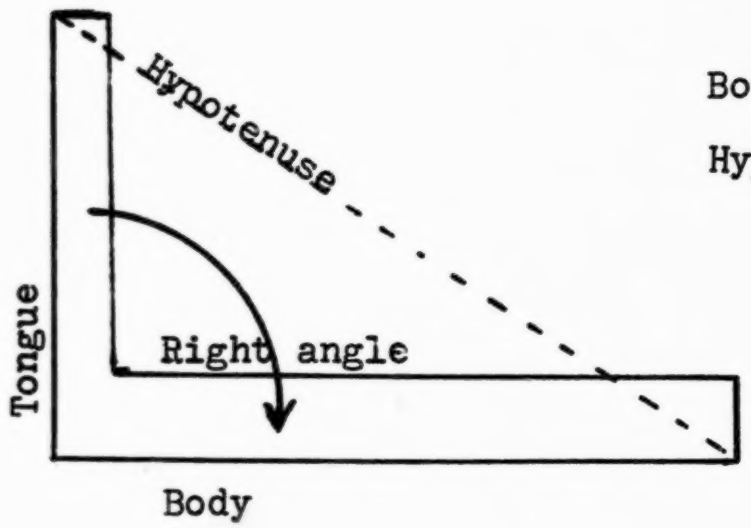
Abbreviations

inch=in. or "

foot or feet=ft. or'

yard=yd.

mile=mi.



Tongue--represents the altitude of a right triangle

Body--represents the base

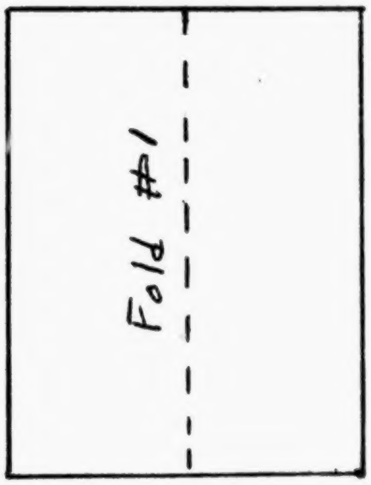
Hypotenuse--is the side opposite the right angle

Name Section Date

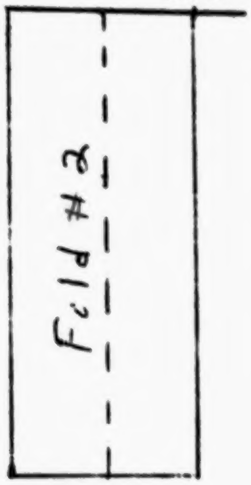
Worksheet #7

Students' Self-made carpenters' Square: Guide Sheet

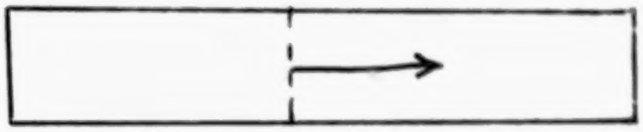
1. Fold standard sheet ($8\frac{1}{2}$ x 11) to divide the $8\frac{1}{2}$ side in halves.



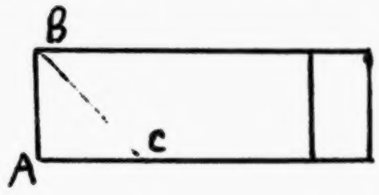
2. Fold again in the same way and crease the fold hard.



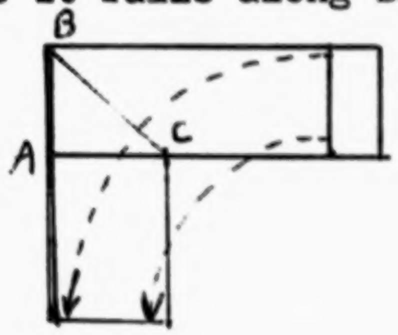
3. Measure down each of the long sides from the same end 5", fold it down hard. . . against itself.



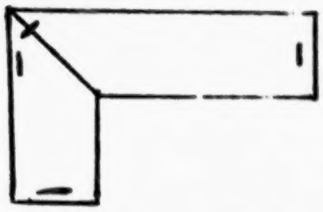
4. Draw line BC



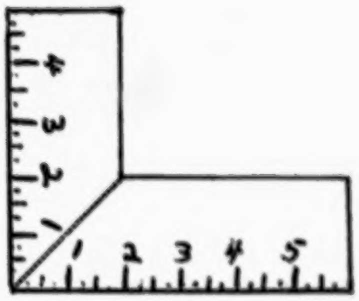
5. Fold top leg on line BC so it falls along BA



6. Staple in four places



7. Mark and number measuring edges beginning at the vertex on both the inner and outer edges of the ruler. Inches, halves, quarters, only.



8. Keep you carpenters square for checking square corners and for making measurements.

Name Section Date

Worksheet #CA7A

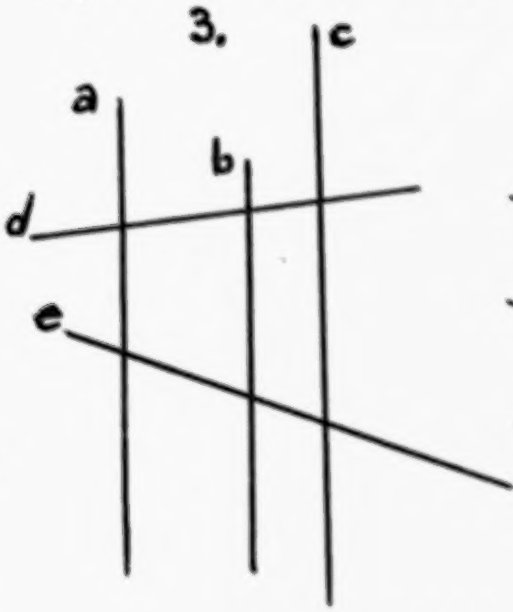
Worksheet using student square

1. Draw a line down both sides of one leg of your carpenter square. What can we say about these lines?

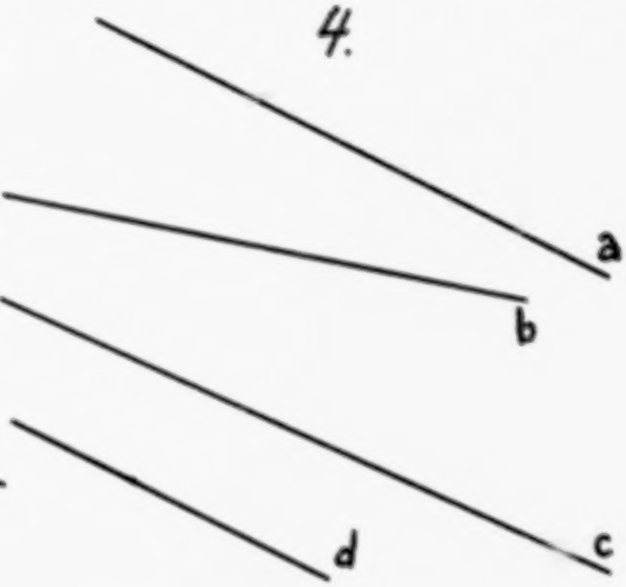
2. Draw the complete outer edge of your carpenter square on the paper. What can we say about these lines?

3.-5. Which of these lines are parallel? Why are they parallel?

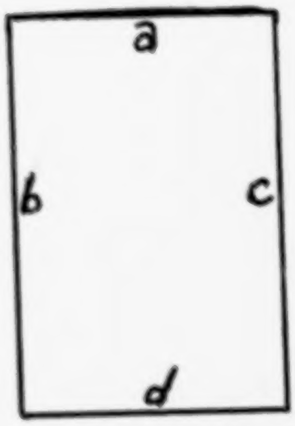
3.



4.

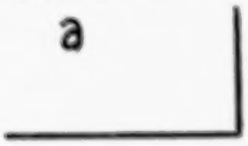


5.

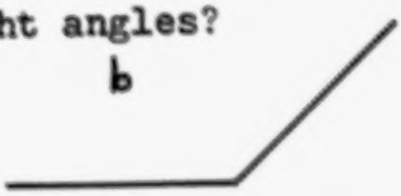


6. Which of these are right angles?

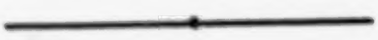
a



b



c



7. What are the measurements of each of the above angles?

8. Name at least 5 sets of parallel lines in the construction of our classroom.

9. Name at least 5 sets of right angles used in the construction of our classroom.

10. Adjacent right angles form____.

11. Right angles cut in half form angles of ______degrees.

12. Lines forming right angles are_____________to each other.

Name Section Date

Worksheet #7B

Fill in the missing quantities.

1. 1 ft. is ______in.
2. 36 in. are______ft.
3. 1 yd. is______ft.
4. 4 ft. are___in.
5. 5 in, are ___ft.
6. $\frac{1}{4}$ yd. is ____ft.
7. $1\frac{1}{2}$ ft. are ___in.
8. 42 in. are ____ft.

9. Using our steel square, how can we be sure our corners are right angles?

10. a)How wide must be the space into which our 3' x 3' bookcase will go? b) How much space will be left on either side if the space is 4 feet wide?

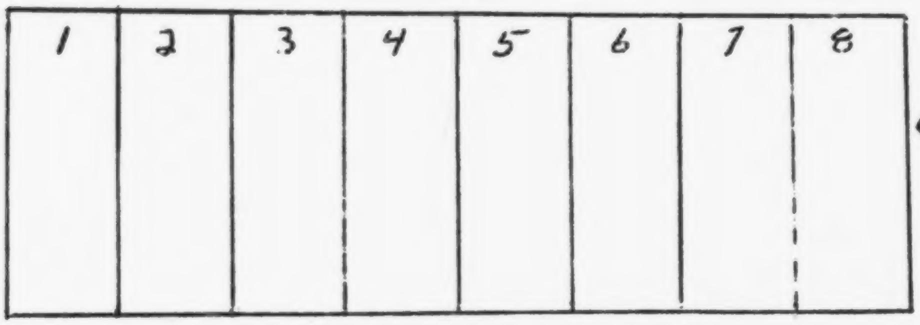
11. If we use quarter round to re-enforce the backs of our bookcase shelves, how long a piece should we buy when the shelves are 10" deep, 3 ft. long and there are 3 of them?

12. If the quarter round costs 5 cent per foot, how much will it cost us to use the quarter round . if we can buy just the amount we need?

13. If we put 2 doors on the bookcase that is 3' square, a) how wide should each door be? b)Suppose we use one door and cut it out of a piece 4' x 4'. How much wood would we have left in square feet? c) In inches?

14. The idea of the bookcase gave John chance to build a planter to start things growing for his garden. He is using $\frac{1}{2}$" plywood.

He wants to plant 8 different kinds of plants in equal little beds. The dividers will be 4" high. The bottom will be the ground and the long sides will be of tin he has for that purpose. The wooden parts must be cut from a piece of plywood 4' x 8'. a)How much wood will be left when the planter is ready? b) How much wood will he have used?



Each strip is $\frac{1}{2}$" x 4" x 4'

as are the ends

Name Section Date

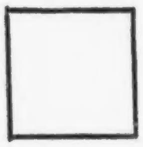
Worksheet #8A

Measurement

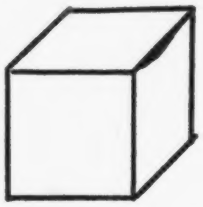
Length-Area-Volume

We use line segments, squaresand cubes for measuring.

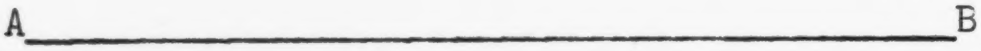
Line segment



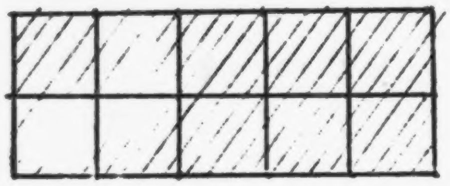
Square



Cube



We count segment units to find length.
The line segment AB= ? Units (inches)

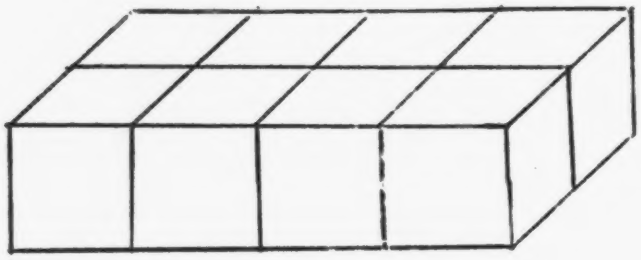


We count square units to measure area.

It takes 10 square units to cover the shaded region.

The area of the rectangle ABCD= ?

We count cube (cubic) units to measure volume.



It takes 8 cube units to fill the space. The volume of the figure is 8 cubic units.

Worksheet #8B

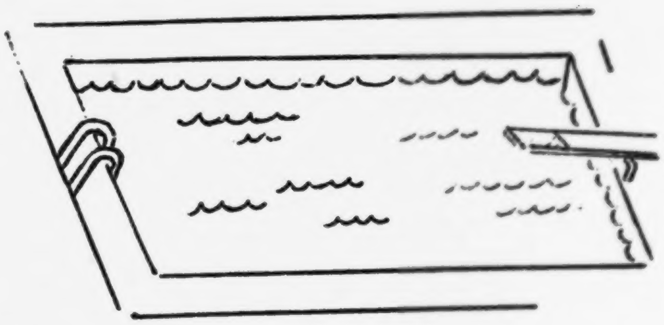
Exercises:

Do you need to find length, area, or volume to answer each question?

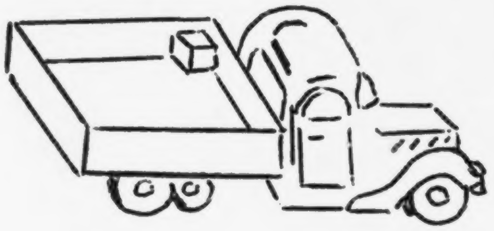
1. How deep is the pool? 1.____

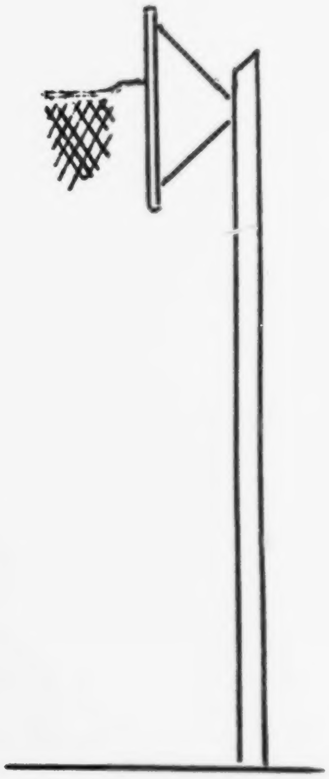
2. How much water does the pool hold? 2.____

3. How large a piece of plastic must we buy to cover the pool? 3.____



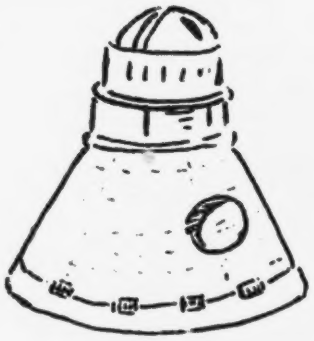
4. How many boxes will the truck hold? 4.____





5. How high is the basket? 5.____

6. How much room is inside the space capsule? 6.____



7. What size belt do you wear? 7.____

8. How tall is an Atlas rocket? 8.____

9. How large is the canvas that covers the baseball diamond? 9.____

10. What size rug shall we buy to cover the floor? 10.____

Name Section Date

Worksheet #9

A Suggested Review

1. From the instructions, make up a problem of your own, and solve it.

   a. Show how to add 4 three-digit numbers.

   b. Do a multiplication problem with 2 three-digit decimal fractions. Show how to check your answer.

   c. Perform a multiplication problem with 3 fractions. Choose the fractions so you can do some canceling.

how
2. Show/to round a number like 456.463 to hundredths, tenths, units, tens, and hundreds.

3. List some of the many measurements which are made during the construction of a book-case. Some examples are: length of shelves; width of shelves; etc.

4. List the faults which might appear in a finished book-case, and describe the arithmetic which have prevented, or corrected, these faults. For example: shelves not parallel; not enough paint; etc.

Answer Sheet

Worksheet #10, Unit Test A

1. $17\frac{3}{4}$; $14\frac{7}{16}$; $5\frac{7}{16}$; $1\frac{9}{10}$; 295; 377

2. $\frac{5}{16}$; $\frac{7}{8}$; $1\frac{1}{4}$; $1\frac{5}{8}$; $2\frac{1}{2}$

3. a. $\frac{1}{4}$"
   b. $\frac{1}{2}$"
   c. $1\frac{1}{2}$"
   d. 1"
   e. $1\frac{1}{4}$"
   f. $1\frac{3}{4}$"

4. a. 6; b. $13\frac{1}{2}$; c. 7; d. 54; e. 36

5. $4\frac{1}{2} + 1\frac{1}{2} = 6$
   $5\frac{1}{2} + 0 < 6$
   $2 + 3\frac{3}{4} < 6$
   $1\frac{3}{4} + 1 + 3\frac{1}{4} = 6$

   Therefore, 4 six-foot boards are needed.

6. \$1.50; \$15.64; \$3.23; \$1.68; \$.90

Worksheet #10, Unit Test B

1. a. $17\frac{1}{2}$ b. $6\frac{7}{8}$ c. 11'2" d. 2'7"
3. a. $\frac{2}{3}$ b. $\frac{1}{2}$ c. $\frac{1}{4}$
4. a. 12 b. 40 c. 9
5. 9 sq. ft.; 360 sq. in., or, $2\frac{1}{2}$ sq. ft.

Name Section **Date**

Worksheet #10

Unit test, A

1. Perform the following operations:

$$\begin{array}{r} 6\frac{1}{2} \\ 3\frac{3}{4} \\ 2\frac{1}{8} \\ +\ 5\frac{3}{8} \\ \hline \end{array} \qquad \begin{array}{r} 4\frac{5}{16} \\ 4\frac{3}{8} \\ 2\frac{1}{4} \\ +\ 3\frac{1}{2} \\ \hline \end{array} \qquad \begin{array}{r} 13\frac{5}{16} \\ -\ 7\frac{7}{8} \\ \hline \end{array} \qquad 2\frac{3}{8} \times \frac{4}{5} \qquad \begin{array}{r} 64,218 \\ 73,310 \\ 92,418 \\ +\ 65,431 \\ \hline \end{array}$$

2. Put in order from small to large: $1\frac{1}{4}$, $\frac{7}{8}$, $2\frac{1}{2}$, $\frac{5}{16}$, $1\frac{5}{8}$

3. Round off to the nearest $\frac{1}{4}''$

a) $\frac{5}{16}''$ ________

b) $\frac{3}{8}''$ ________

c) $1\frac{7}{16}''$ ________

d) $\frac{7}{8}''$ ________

e) $1\frac{3}{16}''$ ________

f) $1\frac{5}{8}''$ ________

4. If the ratio of a to b is the same as c to d, find c in each problem.

a) a=2, b=4, c= ________, d=12

b) a=$4\frac{1}{2}$, b=9, c= ________, d=27

c) a=4, b=20, c= ________, d=35

d) a=18, b=20, c= ________, d=60

e) a=6, b=$6\frac{1}{2}$, c= ________, d=39

5. If boards came only in 6 foot lengths, how many would you need to take care of the following lengths?

$4\frac{1}{2}'$, $5\frac{1}{2}'$, $2'$, $1\frac{3}{4}'$, $3\frac{1}{4}'$, $1\frac{1}{2}'$, $1'$, $3\frac{3}{4}'$.

Name Section Date

6.	$ .15	$ .68	$ .17	$ .08	$ .20 x 4½ =
	x 10	x 23	x 19	x 21	

7. Discuss briefly why a "carpenter's square" is an important tool.

Name Section Date

Worksheet #10

Unit Test, B

1. a)

$$\begin{array}{r} 2\frac{1}{3} \\ 8\frac{1}{4} \\ +\ 6\frac{1}{2} \\ \hline \end{array}$$

b)

$$\begin{array}{r} 9\frac{3}{4} \\ -\ 2\frac{7}{8} \\ \hline \end{array}$$

c)

$$\begin{array}{r} 7'10'' \\ +\ 3'\ 4'' \\ \hline \end{array}$$

d)

$$\begin{array}{r} 5'\ 5'' \\ -\ 2'10'' \\ \hline \end{array}$$

2. Write 3 other fractions equivalent to the one given.

a) $\frac{1}{2}$ ________ ________ ________

b) $\frac{2}{3}$ ________ ________ ________

c) $\frac{3}{4}$ ________ ________ ________

3. Reduce the following fractions

a) $\frac{16}{24}$ ________

b) $\frac{25}{50}$ ________

c) $\frac{15}{60}$ ________

4. Supply the missing number so as to make the fractions equal

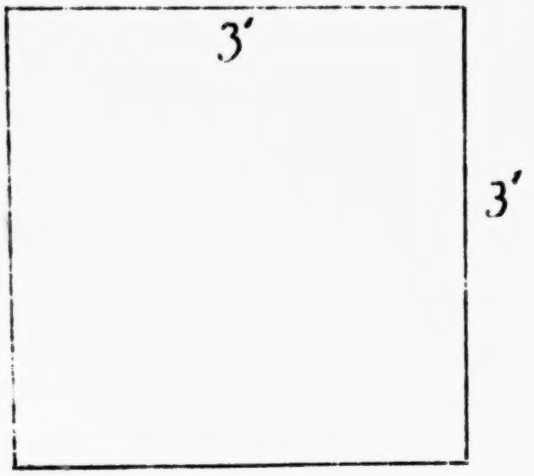
a) $\frac{3}{4} = \frac{\quad}{16}$

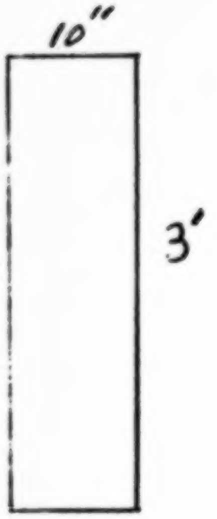
b) $\frac{7}{8} = \frac{35}{\quad}$

c) $\frac{5}{\quad} = \frac{25}{45}$

Name Section Date

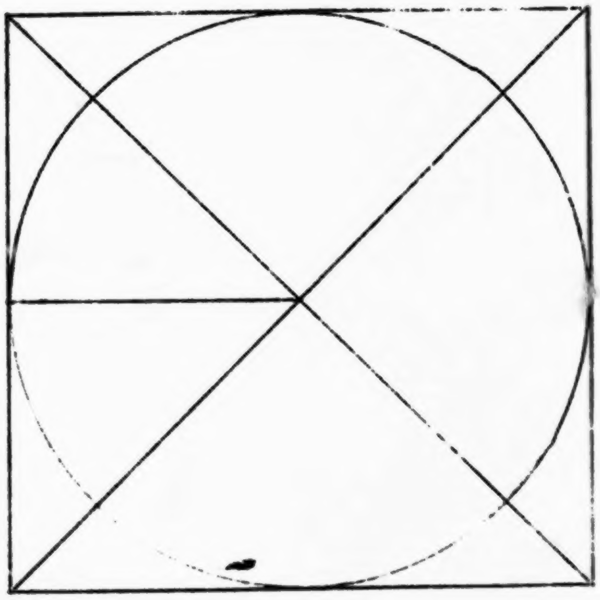
5. Here are two views of a bookcase. Find the area of each





Area=__________ Area=__________

6. Mark with a small solid square (▙) at least 5 right angles in the diagram.



Teacher Suggestions #1

Mathematics: (Bowling)

Addition

Finding averages and Handicaps

Instructions in "How to keep score"
(Teacher should review scorekeeping)

Materials:

Score sheets (pick-up at bowling alley during field trip)

Projectual/overlay of scoresheet

Activities:

Field trip
Keep all records - to be used in class.

Use this information to discuss the mathematics mentioned above.

The worksheet is a follow-up of class work

Vocabulary:

- Frame
- Strike
- Spare
- Split
- Miss
- Double
- Turkey

Math in Sports:

Answers

MS1

1. a. 119, 116, 133, 108 } Mary, John, Joe and Susan respectively.
   b. 6, 9, 0, 17 }

2. 20, 39, 48, 51, 69, 77, 86, 106, 126, 141.

MS2A and MS2B

1. a. $3\frac{1}{8}''$ x $7\frac{1}{2}''$ b. 120 yds. c. 360 ft. d. 4320 in.

2. a. $36\frac{1}{6}$ yds b. $20\frac{2}{3}$ yds. c. $12\frac{2}{3}$ yds.

3. a. $2\frac{1}{2}$ yds b. $\frac{1}{2}$ yd. c. $15\frac{1}{2}$ yd. d. 10 yds. e. 3 yds.

MS3

1. a. 270 ft. b. 4050 sq. ft. c. 31.4 ft.
   d. $20\frac{1}{4}$ gals. e. 78.50 sq. ft. f. 3971.50 sq. ft.
   g. 145.12 sq.ft. h. 3681.26 sq. ft. i. 1.8437 gal. (gym coat A)
   18.4063 (gym coat B)

MS4A (standing-4 figures)

National League

St. Louis	.5974
Chicago	.5897
Cincinnati	.5555
Atlanta	.5256
SanFrancisco	.5250
Pittsburgh	.5066
Philadelphia	.5064
LosAngeles	.4358
New York	.3866
Houston	.3670

MS4B

American League

Chicago	.6000
Minesota	.5584
Detroit	.5526
Boston	.5263
California	.5061
Cleveland	.4871
Baltimore	.4675
New York	.4415
Kansas	.4375
Washington	.4303

MS4B

2. a. 388 games b. 388 games c. equal d. Discuss e. yes

MS5A

2. a. $\frac{1}{8}, \frac{1}{4}, \frac{1}{2}$ b. 6:9:2 c. $8'9\frac{1}{2}''$ d. 0:10:8
e. 120 sec or 2 min. f. $197'7\frac{1}{2}''$

MS5B and MS5C

1. a. $.50 b. $.75 c. $1.25; 5 tickets,3tickets,1ticket,2tickets

2. table and graph

3. a. 60 mi. b. 35 mi. c. 22 mi. d. 46 mi. e. 4 hrs.
f. 45 mi or $\frac{3}{4}$ hr. g. 80 mi/hr.

MS6A

1. a.-h. Discuss

2. a. 3.37 in b. 1.0936 times as long c. 9.3611
d. 1,609.34 m e. $\frac{15840 \text{ in}}{60 \text{ sec}} = \frac{402.34 \text{ m}}{60 \text{ sec}} =$ 6.706m/sec.

$\frac{500 \text{ m}}{6.706 \text{ m/s}} = 74$ sec.

MS6B and MS6C

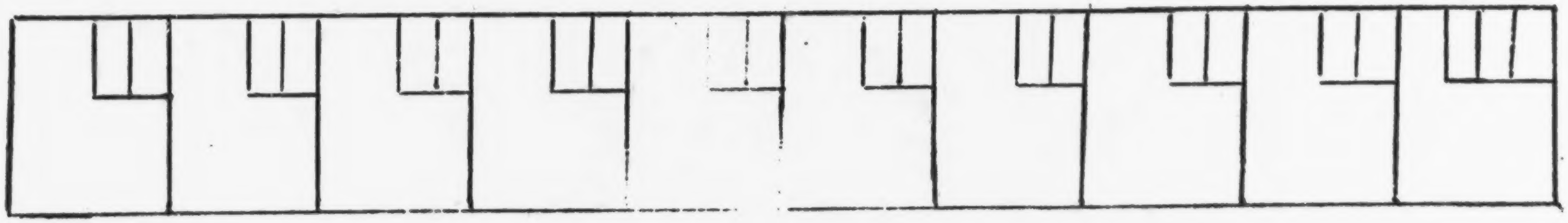
1. a. 6.6 ft. b. 18.04 ft. c. American 13.5 ft., European 13.12
d. 5.49 m.

2. a. 12.8 m b. 38.4 m.

3. American 7.575 yds/sec. b. European 7.389 yds/sec.
c. .186 yds/sec.

SCORE SHEET

BOWLING



MSITD(Transparency Master)

Name Section Date

Worksheet #1

1. Mary, John, Joe and Susan bowled three games each. The following are their individual scores:

	First Game	Second Game	Third Game
Mary	135	95	127
John	101	108	140
Joe	127	132	141
Susan	89	116	121

a. What is the average of each?

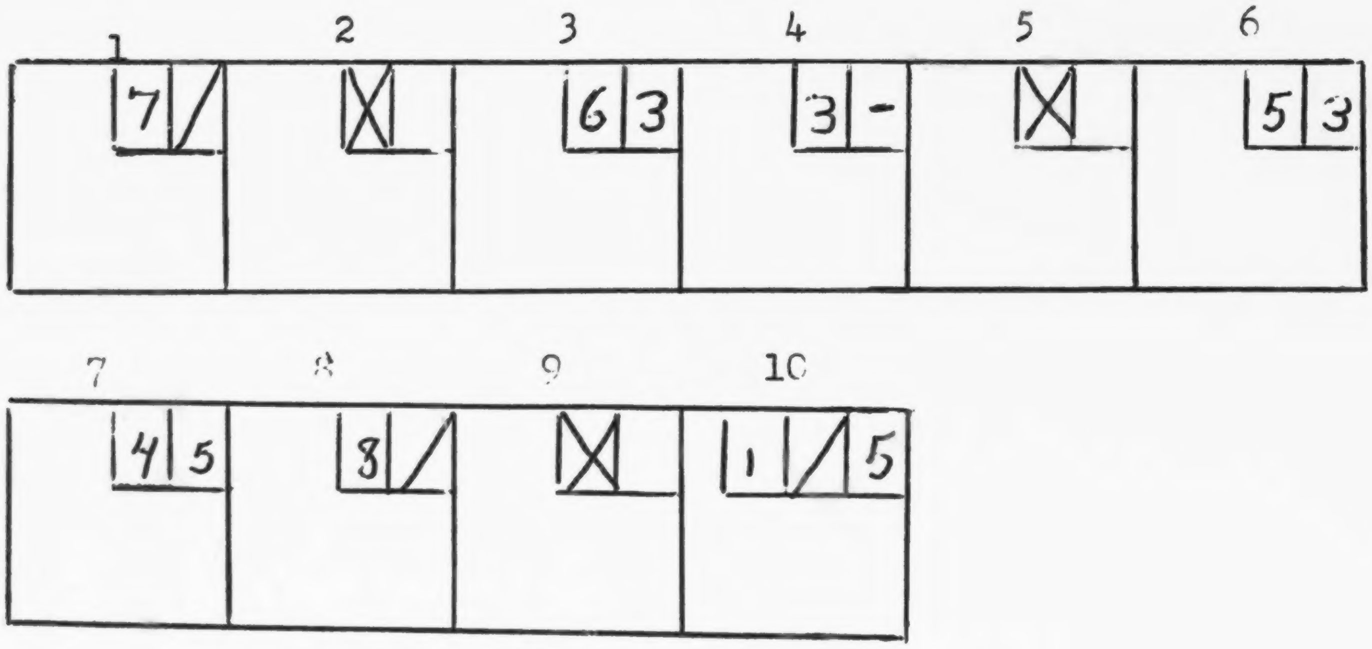
Mary_____________ John_________________

Joe______________ Susan________________

b. What handicap should be given each if it is computed from an average of 125.

2. Complete the following score:

Frames:



Teacher Suggestions #2

Mathematics: (Football)

Scale drawing

Simple conversion

Addition and Subtraction

Discussion:

Football:

Dimension of football field

100 x 50 yd. plus 10 yd. at each end (end zones) 120 x 50 yards.

Scale drawing:

Key words:

Loss	(subtraction)
Gain	(addition)
Difference	(subtraction)
How much more	(subtraction)
How many times	(division)

Name Section Date

Worksheet #2

Exercises:

1.a Make a scale drawing of a football field

Scale: $\frac{1}{16}'' =$ 1 yard

b. What is the total length of the field, in yards?__________

c. Change the total length to feet. ____________

d. How many inches is this?______________

2. A player carries the ball three consecutive times.
First carry: 4 yards

Second carry: $5\frac{1}{2}$ yards

third carry: $16\frac{2}{3}$ yards

a. How many yards in all?______________

b. What is the total number of yards for the first and third carries?_________________

c. What is the difference between the first and third carries?_______________________

Name Section Date

3. A team has the ball for four downs

First down:	Gained 5 yards
Second down:	Lost 7 1/2 yards
Third down:	Lost 2 yards
Fourth down:	Gained 15 yards

If they were on the 5 yard line to start, on what yard line were they after:

a. The first and second downs: ______________

b. The first three downs: ______________

c. All four downs: ______________

d. How many more yards were gained on the fourth down than the first down? ______________

e. How many times as many yards were gained on the fourth down as the first down ______________

Teacher Suggestions #3

Mathematics: (Basketball)

Perimeter:

Rectangle

Area:

Rectangles and Circles

Circumference:

Units of Measure:

Linear
Square

Discussion:

Basketball

Dimensions of the Court

Maximum	94 x 50 ft.
Minimum	60 x 35 ft.

Basket is 10 ft. above the floor.
Diameter of center circle - 10 to 15 ft.

Vocabulary:

Formulas (Perimeter/Area of a rectangle - Circumference/Area of circle)

Radius

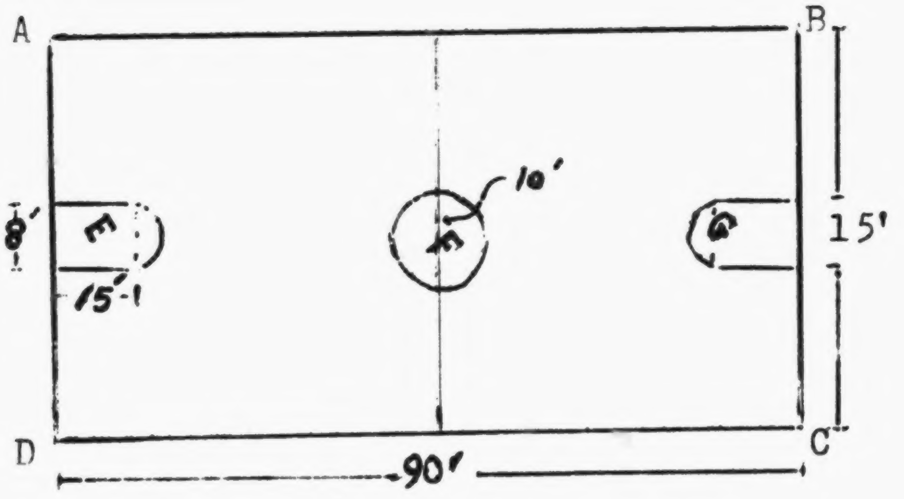
Diameter

Pi (π)

Name Section Date

Worksheet #3

Basketball Court



ABCD = Basketball Court
E and G=Foul Lanes
F=Center Circle

1. a. What is the perimeter of the court? ________

   b. What is the area of the basketball court? ________

   c. What is the circumference of the center circle? ________

   d. If 1 gallon of gym coat will cover an area of 200 sq. ft., how many gallons is needed to paint ABCD? ________

   e. What is the area of part F? ________

   f. What is the area of part ABCD without F? ________

   g. How many square feet are contained in part E? ________

   h. What is the area of ABCD with parts, E, F and G left out? ________

   i. If the foul lanes and the center circle are to be painted with gym coat A and the remaining portion of the court with gym coat B, how much of each must you use?

   (A gallon of gym coat A or B each covers 200 sq. ft.) ________

Teacher Suggestions #4

Mathematics: (Baseball)

- Ratio
- Long Division
- Percent
- Rounding of Decimals

Activities:

- Discuss Baseball
  - Favorite team/player
  - Why do you like a particular team or player?
- Bring in newspaper clippings of baseball standings (Depending on the time of the year)

Example:

St. Louis	Won	Lost
	46	31

Total number of games played

46+31=77

$\frac{46}{77}$ = ratio of games won to total games played

$$77\overline{)46.0000}\quad .5974$$

.5974=.597=.59.7%, correct to 3 figures

.597=.60=60% correct to 2 figures

Name Section Date

Worksheet #4

1. Below are the baseball standings for the teams in the National League and the American League during a recent season.

   a. Give the standing of each in the National League and each team in the American League.
      Write your answer as decimal correct to 3 figures.

   b. Write the answers to part (a) as percents correct to 3 figures.

   c. Write the standing of the team as decimals correct to 2 figures.

   d. Change your answers in part (c) to percents correct to 2 figures.

National League	Won	Lost	Standings	Part b	Part c	Part d
St. Louis	46	31	.597	59.7	.60	60%
Chicago	46	32				
Cincinnati	45	36				
Atlanta	41	37				
San Francisco	42	38				
Pittsburgh	38	37				
Philadelphia	39	38				
Los Angeles	34	44				
New York	29	46				
Houston	29	50				

Name Section Date

Worksheet #4

American League	Won	Lost	Standings	Part b	Part c	Part d
Chicago	45	30				
Minnesota	43	34				
Detroit	42	34				
Boston	40	36				
California	41	40				
Cleveland	38	40				
Baltimore	36	41				
New York	34	43				
Kansas	35	45				
Washington	34	45				

2. Complete the following:

   a. Total number of games won=____________
   b. Total number of game lost=____________
   c. How do a and h compare?_______________
   d. Why is this true?_____________________

   e. Could you conclude the same about the National League?________

Teacher Suggestions #5

Mathematics: (Track)

- Conversion factors
  - Time
  - English
  - Metric
- Line Graph
  - Construction
    - Reading

Formula:

Distance = Rate x time

Line Graph

Materials:

Tape Measure (longest possible)

Stop Watch

Activities:

See how long a student can hold his breath

Take class out-of-doors and mark off 100 yards - time some students

Discussion:

Track and Field

Secondary School - College Level - Olympics

Measurement of time

English and metric systems of linear measurement and their relationship to each other.

Name Section Date

Worksheet #5

World Track and Field Records (for a recent year)	
100 yard dash	0:9:2 ($9\frac{1}{5}$ sec)
220 yard dash	0:20:0 (20 sec)
440 yard run	0:45:7 ($45\frac{7}{10}$ sec)
880 yard run	1:45:1 (1 mile $45\frac{1}{10}$ sec)
1-mile run	3:54:2 (3 min $54\frac{2}{5}$ sec)
High jump	7 ft. 5 in.
Pole Vault	16 ft. $2\frac{1}{2}$ in.
Running broad jump	27 ft. $1\frac{3}{4}$ in.
16-lb shot put	65 ft. $10\frac{1}{2}$ in.
Discus throw	20 ft. $10\frac{1}{2}$ in.

1. a. What part of a mile is each of the following:

220 yard dash __________
440 yard run __________
880 yard run __________

b. What is the total time required to run all five track events, according to the chart above?__________

c. How much higher is the pole vault record than the high jump record?__________

d. How much longer did it take to run the 220 yard dash than the 100 yard dash?__________

e. Assuming that the runner's speed is uniform, how long would it take the runner of the 220 yard dash to run $\frac{3}{4}$ of a mile?__________

f. How far is three times the shot put record?____________

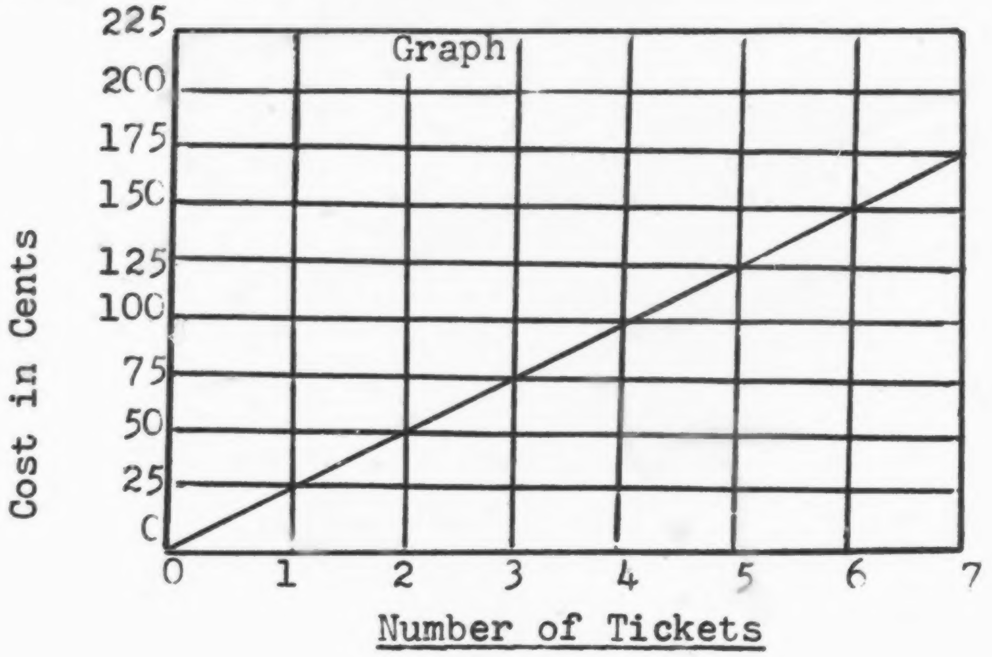
Name Section Date

Worksheet #5

1. Student tickets for a local track meet cost 25 cents.

Table

Number of Tickets	Cost in cents
1	25
2	50
3	75
4	100
5	125
6	150
7	175
8	200
9	225
10	250



a. Read from the graph the cost of:
2 tickets________ 3 tickets__________ 5 tickets________
Read from the graph the number of tickets that you can buy for:
1.25________ .75____________ .25_____________

2. Thomas can run 40 yards in 5 sec. (assume his rate remains the same for shorter or longer distances)
a. Use the formula d=r x t, make a table for: t=5,10,15,20,25,and 30.

b. Make a line graph

Graph

Table

Name Section Date

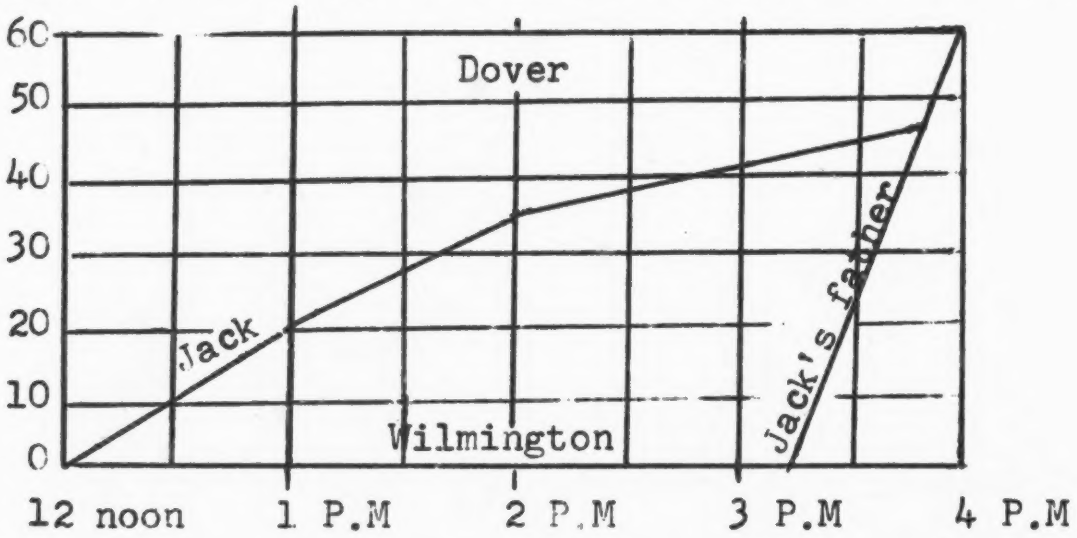
c. Read from the graph the distance he runs in $\frac{1}{4}$ min.________

25 sec.__________14 sec______

d. Read from the graph the time it will take him to run:

80 yds____________60 yds____________160yds_______240 yds_______

3. Jack started from Wilmington at noon to ride his bike to Dover



a. How far is Dover from Wilmington?________________

b. How far did Jack travel the first two hours?______

c. How many miles did he go between 1 and 3 o'clock?___

Jack's father left Wilmington in the family car at 3 P.M.
He overtook Jack at the point shown on the graph.

d. What distance had they gone when Jack's father overtook him______________________

e. How long did it take Jack to reach Dover______________

f. How long did it take Jack's father to reach Dover______

g. At what rate of speed was Jack's father traveling______

Hint: d=r x t

Name Section Date

Worksheet #6

Metric System

10 millimeters (mm)=1 centimeter (cm)
100 centimeters=1 meter (m)
1,000 meters=1 kilometer (km)

Metric to English

2.54 cm=1 inch
1 meter=39.37 inches
0.62 kilometers=1 mile

1. Fill in the blank spaces:

a. 724 cm=____________mm
b. 427.3 mm=__________cm
c. 62.4 km=___________km
d. 19.55 mm=__________m
e. 2,910 cm=___________m
f. 4.5 m=______________cm
g. 8 cm=_______________m
h. .025 m=_____________cm

2. Answer the following questions:

a. How much longer is a meter than a yard?____________

b. A meter is how many times as long as a yard?________

c. How many yards longer is a 100-meter dash than a 100-yard dash?____________

d. A mile is 1,760 yards. How many meters are there in a mile?______________

e. Thomas can run the 440 yard dash in 1 minute. How long would it take Thomas to run 500 meters at the same rate?______

$$\frac{440}{60}\,\frac{\text{yd.}}{\text{sec}} = \frac{\underline{\qquad\qquad}\ \text{in}}{60\ \ \text{sec}} = \frac{\underline{\qquad}\ \text{m}}{60\ \ \text{sec}} = \frac{\underline{\qquad\qquad}}{1}\ \text{m/sec.}$$

$$\frac{\underline{\qquad\qquad}\ \text{m}}{\text{m/s}} = \underline{\qquad\qquad}\ \text{sec}$$

Name ______________ Section ______________ Date ______________

Worksheet #6

Comparison of two track meets, European and American.

European	Junior High Schools		American
Events	Results	Events	Results
High Jump	2m	High Jump	6'7"
Pole Vault	4m	Pole Vault	13'6"
Running Broad Jump	$5\frac{1}{2}$ m	Running Broad Jump	18'
100 meter dash	14.8 sec.	100 yard dash	13.2 sec
500 meter dash	50.5 sec.	440 yard run	49.6 sec.
1,500 meter run	4 min 52 sec	1 mile run	4 min 20 sec.

1. Use your knowledge of conversion facts to answer the following: Show all work

   a. How many feet did the European student high jump? (nearest tenth of a foot)

   ____

   b. Convert the results of the European running broad jump to the English system of measurement. (nearest tenth of a foot)

   ____

   c. Which track team had the best results in the pole vault? (Prove your answer)

   ____

   d. Change the American running broad jump results to the metric system of measurement. (nearest hundredth of a meter)

   ____

Name Section Date

Worksheet #6

2. Running at top speed, Bobby can cover a distance of 14 yards in two seconds. At the same rate of speed: (Show all work)

   a. How many meters can he run in 2 seconds? __________

   b. How many meters can he run in 6 seconds? __________

3. Comparing the results of the American 100 yard dash with the European 100 yard dash:

   a. How many yards per second did the American team cover in the 100 yard dash? ______________________

   b. How many yards per second did the European team cover in the 100 meter dash? ______________________

   c. What team ran the fastest and how many yards faster per second ______________, _________________.

Teacher Suggestions #1

Mathematics to be taught:

1. Value of standard units over nonstandard units
2. Multiplication:
   a. Whole numbers x whole numbers
   b. Fractions x fractions (common)
   c. Whole numbers x fractions
   d. Whole numbers x mixed numbers
   e. Mixed numbers x mixed numbers
3. Addition, subtraction, division of rational numbers
4. Finding average
5. Balancing, lifting, finding mathematical pleasures in doing so, their potential values and uses to man.

Materials:

1. Balance scales, standard weights up to about 5 lbs.
2. Bathroom scales, a few boards approximately 2' x 6" x 1' with center fixed over cement brick or wedge (wedge better due to point)
3. Different sized stones weighing from a few ounces to a few pounds (up to approximately 5 pounds)
4. A variety of related containers to hold objects on lever
5. Pie plates, rulers, string.
6. Textbook could be used as fulcrum for crude scales.
7. Water, sand, sawdust, erasers, small pieces of chalk, checkers could fill containers

Activities:

1. Students divided into "cave" groups or "families" to try caveman's methods of balancing (2,3,4,5, groups as equipment suggests)

2. Balancing: (1) by improvised scales, (2) discovering usefulness, (3) changing balance arm
    a. Ruler over textbook on desk: center fixed
    b. Board approximately 2" x 8" x 6': center fixed
3. Compare stones:
    a. by size
    b. by feel
    c. by weight on improvised scales
4. Record findings or conclusions reached
5. Discovering things of the same material and size weigh about the same: checkers, cups of the same thing, etc. (approach to standard units)
6. In right places, teacher may ask: "Have we learned anything useful here?"

Suggested discussion questions:

1. About how many years do you think it took man to learn these things?

   How did he record "how many"?

   How did he record "how many" of a special kind?

2. Do you think the review of man's development along this line helps one to improvise when necessary?

At the end of first day's discussion--ask students to bring a few stones weighing up to two or three pounds to class.

(In this unit, it is important that each child do every page even if it takes twice the time on this unit)

Teachers Page: Oral Introduction

1. Find out how students feel early man counted: for student answers.

   Keep this part of the discussion going until someone comes up with a close idea of correspondence one to one counting.

2. How did this advance to larger units?

   (hand, because it seemed the natural first collection, two hands were possible next units, etc.)

3. Were there difficulties in telling someone else how many?

   What were some of the still larger units used?

4. How may they have started the idea of length or width?

   (finger width may have been first inch, arm may have been first yard, anyones foot, etc.)

5. Who really made final decision about units those days? (King) Do you feel these early units were satisfactory? Why?

6. Have you seen machines with bars moving about them to move things? (cranes, seesaw, scales, etc.)

7. Is size a limiting factor if the machine is large enough? (No)

8. Have you ever seen a seesaw, and used one for fun?

9. What were you actually doing when you tried to find someone to help you enjoy the seesaw? (trying to find someone to balance you)

10. Did you think, 'which friend might be more fun?' (Yes, weight was a factor)

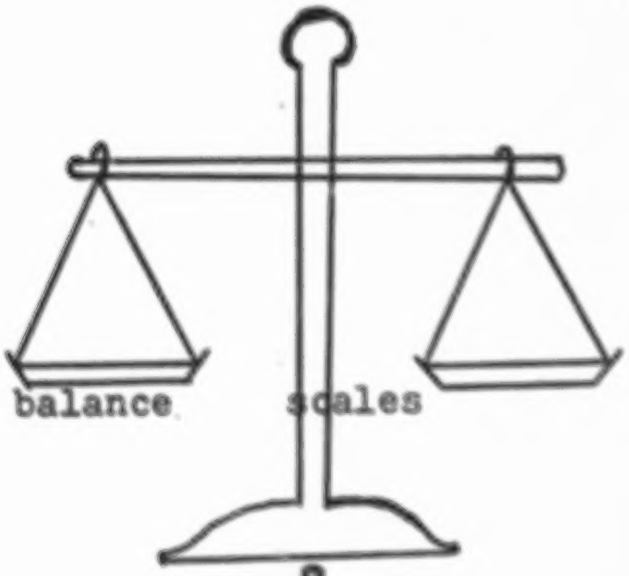
11. Was your seesaw fixed in the center, or could you move it about? Why?

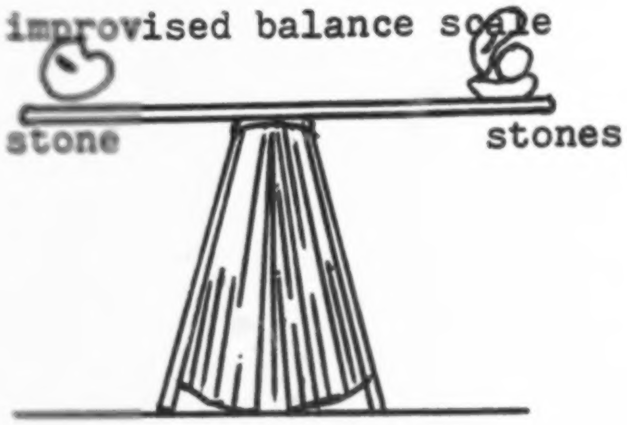
12. Have you ever guessed at an answer? Was your guess close, or way out in left field?

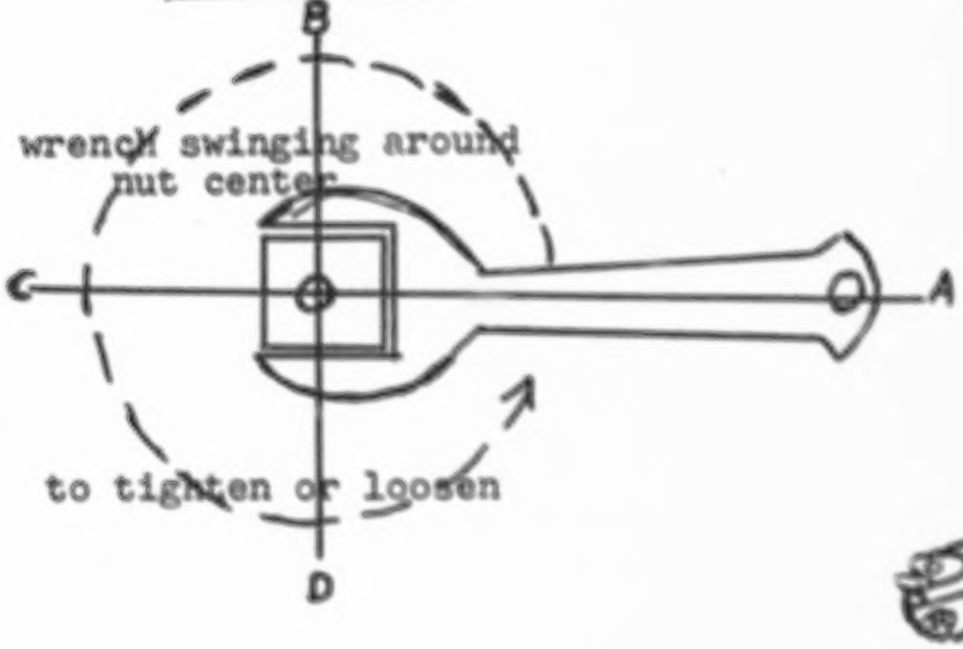
13. Have you ever been very sure you were close to the answer? What word could we use for this? (close guess,gestimation, educated guess)

Name Section Date

Levers

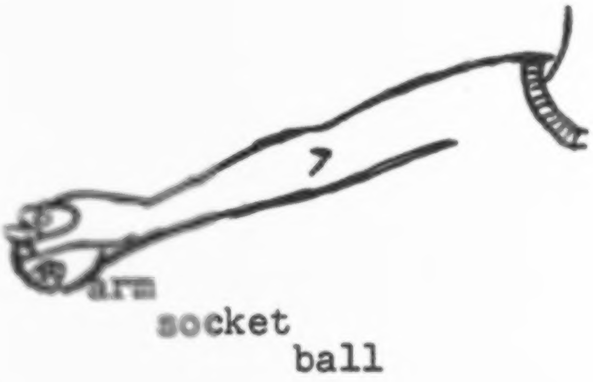

balance scales

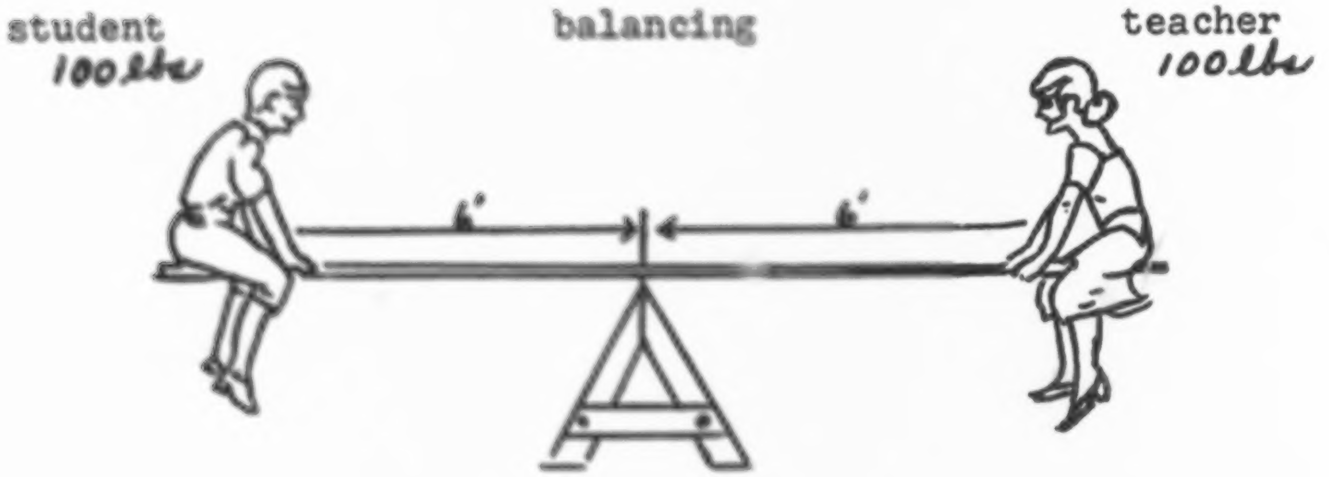

improvised balance scale
stone
stones


B
wrench swinging around nut center
C
A
to tighten or loosen
D

textbook

arm-ruler or board on fixed point of book


arm
socket
ball


student
100 lbs
balancing
teacher
100 lbs
6'
6'

Teacher's Suggestions #2

1. It is well to have a box somewhere in the classroom for non-standard, and standard weights to be kept. If all department teachers use them, they can be kept in a central place for accessibility.

2. Books can serve as weights or as a fulcrum, or you may easily use rocks, stones, containers of chalk, etc.

3. A nice large roll of scotch tape or marking tape should be kept convenient for students and teachers use in labelling, patching books, etc.

4. An old fashioned balance scale (lever type), ruler, textbook for fulcrum, several boards approximately 1" x 6" x 2' could be used instead of a ruler.

5. A plank and cement block, etc. could be gotten from the workshop or janitor. Foot markings could be in color by using magic marker.

6. This is a very good place to discuss any kind of units you feel are necessary.

7. Stress importance of recording findings and their usefulness for reference in the future.

8. Be sure to express enjoyment in what is being done: Recognize even small successes, keep the attitude of appreciation alive.

9. Allow students to work in groups part of the time (cooperation).

10. Stress terms with which students should become familiar.

11. Help them put action images into words. . .what have we done today? What did we do yesterday?

12. How could we have done the same thing better?

13. Recognize individual difficulties when they arise (between teacher and the single student), but praise each as far as possible. Frequently, teacher could say, "Wasn't that fun!, etc.

14. Stress the fact that machines can do a very good job even when improvised.

15. It is not always necessary to buy things to get a job done well.

16. Encourage students to have own tools, but don't hesitate to allow them to use those of the class, or your collection.

17. Allow them to add extra sheets of their own paper where ever they feel the need.

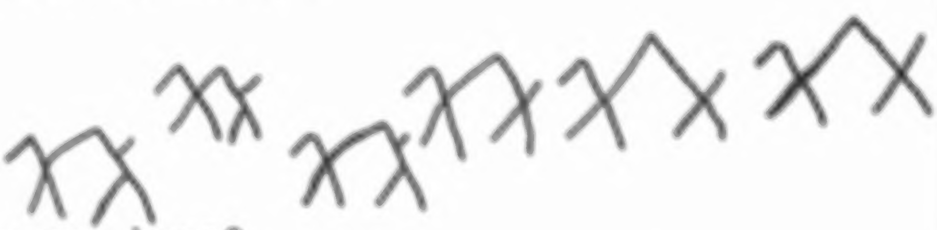
18. Students can be primed to lead activity period preceding work at desks. Improvised scales can be demonstrated in several different ways.

Labelling of nonstandard units can be demonstrated in several different ways.

Class can start examining things on the work table in the front or center of room while the teacher is on the hall during class passing. The equipment for the class could be used as an interest getter.

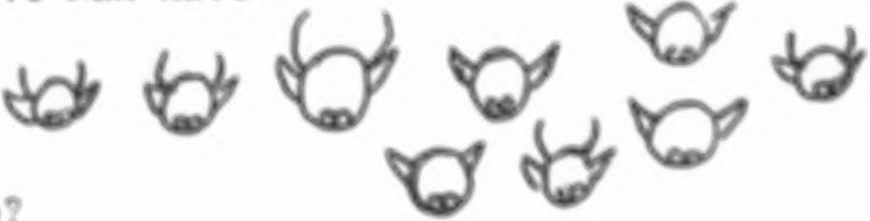
19. Review processes to be used in seat work during oral period. . . use one or two kinds of improvised units:

addition
subtraction
averaging
checking by casting out 9's



20. How many camels did the cave man have?

21. How many cows were there?



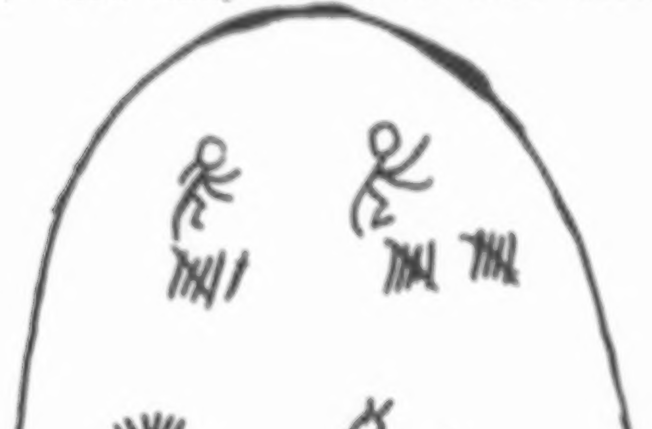
22. How many wives did he have?

23. How many boys did he have?

24. How many girls were in his family?

25. How many fathers were in his family?

26. How many lived in his cave?



(Teacher can put drawings on board)

Teacher's Extra Credit answer sheet for SC2C

I. (1) 278
(2) 328
(3) 2912
(4) 8520
(5) 108180

Average: 24045 2/5

II. (1) 1089
(2) 5989
(3) 89423
(4) 2140
(5) 1812798

Average: 1812798

SC3B Answers

(1) 90
(2) 65
(3) 995
(4) 1633
(5) 1228
(6) 538038
(7) 270900
(8) 516385
(9) 92862
(10) 847602
(11) 6505 R 136
(12) 2034 R 309
(13) 1088 R 239
(14) 200 R 50
(15) 2600
(16) 32304
(17) 16734
(18) 6742
(19) 17606
(20) 20683

Name Section Date

Experiment: To find the utility of nonstandard units

Given: An assortment of stones labelled as to nonstandard units.

Required: Make a table of these units and the stones as you have labelled them. Show their ordered weights by the use of columns in relation to your selected standard one. Call your units what ever you wish.

Procedure: Below, is a chart you can use.

Name Section Date

Extra Credit

I

1. 72+ 38 + 54 + 67 + 19 + 28
2. 69+ 58 + 47 + 93 + 25 + 36
3. 813+716+ 453 + 128+237 + 565
4. 785+1928 + 5676 + 66 + 74
5. 51886 + 9476 + 46776 + 42

1. Find their sums
2. Find the average of the sums

II

1. 2438 - 1349
2. 54798 - 48809
3. 163809 - 74386
4. 40079 - 37939
5. 6900783 - 5087985

1. Find their difference
2. Average the differences.

Teacher Suggestions #3
Data Sheet

Mathematics to be learned:

1. Need for standard units
2. Finding error
3. Developing skill in following directions
4. Comparing
5. Finding ratio
6. Averaging of sums, and differences
7. Checking answers a-reverse process, b-casting out 9's
8. Guessing weights
9. Stressing observation and conclusions

Materials:

1. Bathroom scales

General Discussion

1. What are the parts to be added called? **(addends)**
2. If we added all the weights in this room, what would the parts be called? **(student weights = addends)**
3. Write guessed weights over their scale weights and reduce to find the ratio.
4. Subtract the smaller (guessed or scale) from the larger to find the error.
5. How clear are the units we have used? (nonstandard)
6. Did you find ease in adding them? **(no)**
7. Which were easier to use? **(standard)**
8. Orally compare conclusions until class decides on one fact. **(Standard weights are much easier to record, add, etc.)**

Name Section Date

Worksheet #3

Experiment: To compare guessed weights with those actually measured by scales.

Given: Ordered charts

Procedure:

1. List of names of those in your cave family (row).
2. List teacher's guessed weight.
3. Weigh each person named in your chart and record weights on chart.
4. To find ratio: place guessed weight over scale weight and reduce.
5. To find error: subtract the smaller of the two weights (guessed or added) from the larger.
6. Find the total of each row by adding data in it.
7. Find the average of each row by dividing the total by the number of weights added.

		Name	Guessed	Scale	Ratio	Error
1						
2						
3						
4						
5						
6						
7						
8						
9						
	Total					
	Average					

Name Section Date

Extra Credit

1. 87 + 3
2. 56 ÷ 9
3. 743 + 252
4. 938 + 695
5. 976 + 252
6. 842 x 639
7. 700 x 387
8. 743 x 695
9. 938 x 99
10. 8649 x 98
11. 923846 ÷ 142
12. 720345 ÷ 354
13. 293999 ÷ 270
14. 87050 ÷ 435
15. 260000 ÷ 100
16. 92846 - 60542
17. 93261 - 76527
18. 79257 - 62515
19. 26000 - 8394
20. 64275 - 43592

SC3B

Teacher Suggestions #4

1. Review rather closely what was done yesterday. (What did we do yesterday?)

2. If one number or part of a product is missing, how do we find it? (Product = number x number)

   Divide product by given number

3. Multiplication: whole number x fraction.

4. Multiplication: fraction x fraction

5. When you ride on a seesaw, what are the facts you have to think about when:

   picking a partner
   place on the cross bar
   center of crossbar in relation to fixed point
   your distance from center as to your partners distance from fixed point
   your weight as to his weight and both as to distances from fixed point

6. Discussion of yesterdays homework

7. Check weights of various stones by use of balance and actual 1 pound, 1/2 pound, and various ounce weights

8. Discuss ways in which placing weights at various distances from fulcrum illustrates the law of the lever.

Name Section Date

Data Sheet

1. Standard units are easier to use and reread than non-standard ones.

2. Resistance x resistance distance = effort x effort distance.

   $$W_1 \quad x \quad d_1 = W_2 \quad x \quad d_2$$

3. Resistance is the weight or quantity to be weighed . . . (W_1)

4. Effort is the unit or sum of units necessary to weigh our quantity. (W_2)

5. The idea of the lever can be used to lift objects to desired heights as well as for weighing it, balancing, etc.

6. Some other levers are:

   scissors
   tongs
   crowbar
   nut cracker
   wheelbarrow
   broom

   shovel
   bat arm and shoulder
   throwing arm and shoulder
   leg and foot action
   hip leg action
   etc.

7. The heaviest weight is on the side of the shortest distance when lever is not centered, but balanced.

8. The weights are equal when the lever is centered at a fixed point and the distances are the same.

9. The products of W x d on both sides are equal when the lever is in balance.

10. To get a product we multiply.

11. The arm of our scale lever is like a number line. It must have the same size units used on both sides to be effective.

Teacher's Suggestions #5

1. Review data so far.
2. Check on their understanding of equality between whole numbers.
3. Equality between fractions
4. Finding missing numbers in equal fractions
5. How can we apply these facts to balancing?

Answers

SC5A	SC5B
1) 25	1) false
2) 32	2) true
3) 6	3) false
4) 50	4) true
5) 1	5) true
6) 1	6) true
7) 6½	7) false
8) 5	8) true
9) 2	9) false
10) 450	10) true
11) 35	11) true
12) 50	

Name Section Date

Experiment: Lifting teacher, using law of the lever, finding missing parts on chart below.

Given: A large plank at least 6' long, a cement brick or triangle block of wood, a teacher, and any student who wants to try balancing the teacher (lifting).

Chart: Fill in underneath as indicated:

W_1	x	d_1	=	d_2	x	W_2
25	x	10	=	10	x	?
40	x	8	=	10	x	?
30	x	40	=	200	x	?
25	x	200	=	?	x	100
8	x	75	=	?	x	600
80	x	125	=	?	x	10,000
125	x	?	=	8	x	100
60	x	?	=	10	x	30
75	x	?	=	4	x	600
?	x	$8\frac{1}{2}$	=	1275	x	6
?	x	3	=	1	x	105
?	x	2	=	5	x	20

1. Record each product in the margin

2. How would we find the missing numbers?

Name Section Date

Nonstandard units--one person's unit or scale may be as good or better than another: stones, water, sand, sawdust, small pieces of chalk, checkers could be used. . .similar or somewhat equivalent units.

standard units--units of measure than can be read the world over with understanding and ease.

numbers--help one to answer the question 'how many', but alone, mean very little. 'How many what' makes it meaningful.

Number also allows order, design, comparison, pattern, and law.

measurement--process of assigning numbers of units to objects or events

lever--bar free to move about a fixed point called a fulcrum

tools--things that help man do work

arm--the object that can move across a fixed point to help man do work

resistance--weight to be moved or lifted (W_1)

resistance distance--distance of resistance from fixed point d_1

fulcrum--fixed point or support across which arm moves

effort or force--weight needed to balance, raise, or move resistance (W_2)

effort distance or force distance--distance of effort or force weight from fixed point or fulcrum to balance resistance, or lift it to the desired height.

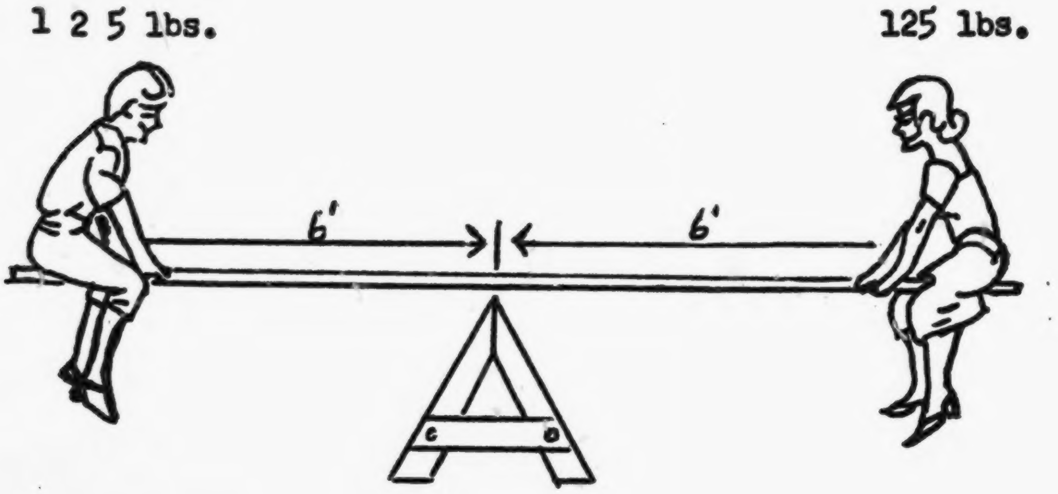
comparing--finding similarities and differences between two things

process--method used to solve experiment or do a definite job

gestimation--reasonable assumption, close guess, educated guess

accuracy--idea of exactness, correctness, conformity to measure or standard close enough to suit the purpose, often expressed in ratio.

Name Section Date


1 2 5 lbs.
125 lbs.
6'
6'

Experiment: Recognizing the law of the lever

It's parts and their relationship to each other

Discovering ratios in the law and their equivalents

Given: Law of the Lever

Resistance x resistance distance = effort x effort distance

$W_1 \times d_1 = W_2 \times d_2$

Ratio Relationship: $W_1 : W_2 :: d_2 ; d_1$

To find: Equivalent quantities in the law as ratios

Work problems by substitution of data from other pages and solve for true or false as answers

Instance:

$100 \times 6 = 6 \times 100$

$50 \times 2 = 5 \times 20$

$W_1 \times d_2 = d_2 \times W_2$

$\frac{W_1}{d_2} = \frac{W_2}{d_1}$ or $\frac{50}{5} = \frac{20}{2}$

Name Section Date

1. $W_1 : W_2 :: d_2 : d_1$
2. $d_1 : d_2 :: W_2 : W_1$

Are these true? Why? If one is missing, how do we find it?

		True	False
1	$\frac{25}{100} = \frac{10}{25}$		
2	$\frac{25}{10} = \frac{50}{20}$		
3	$\frac{40}{10} = \frac{232}{8}$		
4	$\frac{320}{8} = \frac{400}{10}$		
5	$\frac{320}{400} = \frac{8}{10}$		
6	$\frac{W_1}{d_2} = \frac{W_2}{d_1}$		
7	$\frac{W_1}{d_1} = \frac{W_2}{d_2}$		
8	$\frac{W_1}{W_2} = \frac{d_2}{d_1}$		
9	$\frac{W_1}{W_2} = \frac{d_1}{d_2}$		
10	$\frac{d_1}{d_2} = \frac{W_2}{W_1}$		
11	$\frac{W_1}{d_2} = \frac{W_2}{d_1}$		

Teacher Suggestions #7

See how many can spell and define these terms (These and/or other terms you have stressed through class activities)

value--quality, degree or usefulness

average--sum of addends divided by number of addends

variety--range of differences

advanced--improved, better activities or things that come after something else of value or usefulness

decision--conclusion based on data used or experiment results drawn

equation--an expression of equality between two quantities

arm--bar or lever (as used in this unit in this context)

observation--ability to see and study what is going on in experiment or results of a step in an experiment

standard--scale of measure developed through many experiments of trial and error

rational number--any number that can be written in the form of a fraction regardless of the sign

piece--part, fraction

limiting--definite end points or beginning and end

effort or force--pressure or weight necessary to move the resistance

accuracy--degree of or approach to correctness, exactness

fulcrum--fixed point over which the lever arm turns

conclusion--final thought drawn from the development of an experiment, result

fraction--part, relationship between two or more numbers

factor--parts when multiplied give you the product

resistance--weight to be lifted or raised

measurement--finding units (linear or etc.) by comparison which some type ruler or scale gestimation--educated guess, close approximation

experiment--attempt to prove a fact

whole number--integer, number unaccompanied by a part of a number

balancing--expression of equality between two quantities

equivalent--equal

guess--an amount that seems a good one to you in the relation to another

distance--linear measure from one point to another

lever--arm moving around a fixed point that may lift, press, etc. usually a tool to do work for man

order--arrangement according to a plan

units--division of a thing in related parts

II

For each of these, it is suggested that the teacher also use problems to illustrate the points being brought out.

1. How do we multiply by a fraction? $\frac{2}{3} \times \frac{4}{5} = ?$
2. How do we divide by a fraction? $\frac{4}{5} \div \frac{2}{3} = ?$
3. How do we add fractions with different denominators? $\frac{5}{8} + \frac{2}{3} = ?$
4. The resistance distance is always in what measure? Effort distance? (linear)
5. What do we call the relationship of the R to the d, etc? (ratio)
6. How would you find average?
7. What is the law of the lever? Why is it true?
8. What is the difference between quantity and quality?
9. What are some of the levers we use in the home?
10. What are some of the levers we see on construction jobs?
11. Does this unit help us to understand what we see? Does it help us enjoy what we see more?
12. Can we use any of the ideas we have worked with to help us do work?

13. Can we use any of these ideas to help us improvise when we do not have a certain tool?

14. If the person finding the seesaw first is heavy, how can he be balanced by a lighter person?

15. How can he be balanced with the mid-point of the seesaw kept in the fixed center?

16. Suppose we want to raise blocks a certain distance rather than balance them? How could we do this?

17. What is the left side of this experiments equation called? (resistance)

18. What is the right side of the equation called? (effort or force)

19. What are the different kinds of common fractions? (mixed numbers, proper, improper)

20. How do we feel we might have learned these data more accurately, or more enjoyably?

Answers

SC7A

1) weight 1 x distance 1 = weight 2 x distance 2 or $W_1 \times d_1 = W_2 \times d_2$

2) discussion answers all that is required here

3) 46 4/11

4) 47.59

5) 169.2

6) 126.93

SC7B

7) (1) 1, (2) 400, (3) 50

Name Section Date

Written Review

1. What is the law of the lever?

2. What processes do we use to find the equal quantities?

3. The following were the resistance weights to be moved. Find the average.

   25, 40, 30, 25, 8, 80, 12, 60, 75, 150, 5.

4. The resistance distances were as follows: Find the average.

   10, 8, 40, 200, 75, 125, 6 2/5, 5, 8, 8 1/2.

5. If the efforts are:

   10, 10, 200, 50, 25, 100, 8, 10, 4, 1275, what is the average?

6. The effort distances are:

   25, 32, 1200, 100, 600, 10,000, 100, 30, 600, 6, Find the average.

Name Section Date

7. W_1 x d_1 = W_2 x d_2

5 x $8\frac{1}{2}$ = $42\frac{1}{2}$ x ?'

150 x 8' = 3 x ?'

10 x 40' = ? x 8'

8. What is the relationship of each resistance to each resistance distance as given above? What does each form?

9. Suppose, each problem given in #7--all resistances were averaged, all resistance distances were averaged, etc., would we be able to form a new equation that would be true by just using answers?

Check one: Yes No

Do this and see if it is true.

Introduction to the World of Work

The teacher can encourage the class to imagine a typical job accepted by a student newly graduated from High School. This particular job is as a clerk in the Tax Assessment Office of the city. The job begins with passing the mathematics test given to each job applicant. Days in the work life of the employee are considered leading up to receiving the first pay check with its deductions.

To make the unit even more realistic a field trip can be planned to the Office. As future city-dwellers and taxpayers, they would be welcome. At least one visit to the Business Department of the High School is recommended so students can see, and perhaps get formal instruction in, the use of calculators.

Teacher Suggestions are placed in advance of several days work, and may therefore refer to several different worksheets.

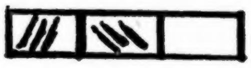
Answers are on Page WW9TA and 9TB

Teacher Suggestions #1

1. Do not avoid giving the students "word problems". The mathematics tests given by industry and business to job applicants often include "word problems."

2. The basic work in this particular job is keeping records on the changes in value of properties in the city. On the Computation sheets, which duplicate a portion of an actual file, the teacher, or student, needs to supply reasonable figures.

3. The dotted sheets are rectangular arrays for scale drawing buildings and lots. A scale of "Ten" would mean 10 feet between each pair of dots. Walls, yard boundaries, porches, etc., are drawn with a ruler, and to scale. Between the dots $\frac{1''}{16}$ would be $2\frac{1}{2}'$. Students can draw the plans to the nearest foot. Bright students might find an Engineer's 3-sided ruler and experiment with its use in scale drawing.

4. In the teaching of fractions and percents diagrams should be used repeatedly. For example $\frac{2}{3}=$  ; and 25% $= \frac{25}{100} =$ 100 equal parts.

Name Section Date

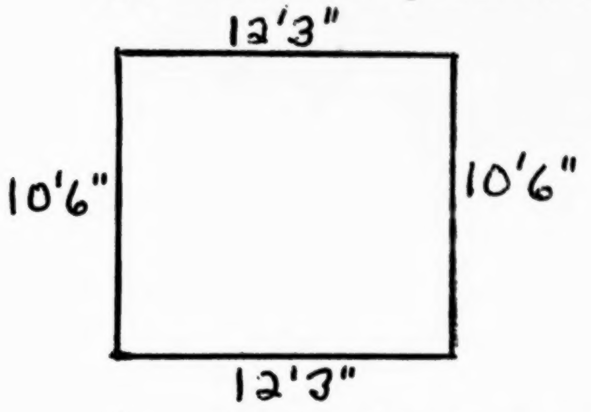
Worksheet #1

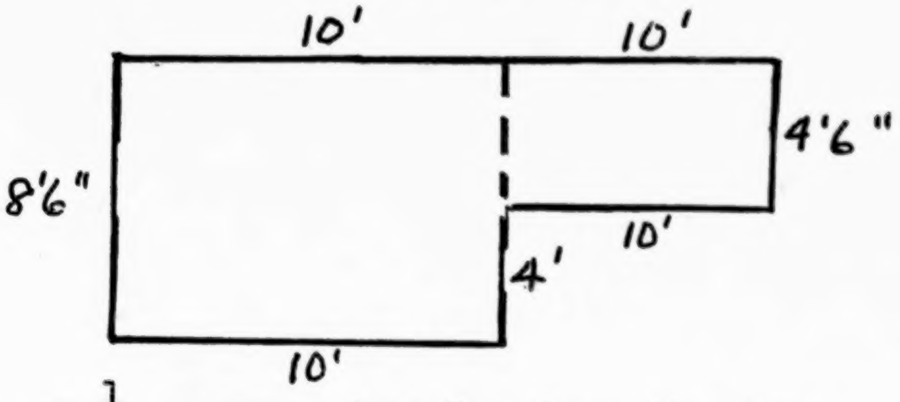
The following are typical problems taken from a test given to those applying for a job as clerk in the city tax office.

1. a) $\begin{array}{r} 11600 \\ 41087 \\ 26135 \\ \underline{13804} \end{array}$ b) $\begin{array}{r} 178 \\ 23 \\ 1496 \\ 218 \\ \underline{340} \end{array}$ c) $\begin{array}{r} 109.37 \\ \underline{-\ \ 29.48} \end{array}$ d) $\begin{array}{r} 78.613 \\ \underline{-\ 21.128} \end{array}$

2. a) $\begin{array}{r} 1.21 \\ \underline{\times\ 3.18} \end{array}$ b) $\begin{array}{r} \$\ 3.08 \\ \underline{\times\ \ \ .79} \end{array}$ c) $6.8\overline{)21.76}$ d) $4.1\overline{)4.223}$

3. Find the perimeter and area of the following figures





4. If an object moves 75' in $\frac{1}{4}$ second, how far does it move in 5 seconds?

5. A soldier hits a target $12\frac{1}{2}\%$ of the time. How many times does he have to fire to get 8 hits?

Name Section Date

Worksheet #2

The main task in most any clerical position is that of keeping records up-to-date. Care in writing individual digits should be exercised. Simple arithmetic problems should be checked and re-checked.

1. a) $$\begin{array}{r}78612\\23540\\+\underline{16830}\end{array}$$

b) $$\begin{array}{r}136\\2784\\18\\+\underline{432}\end{array}$$

c) $$\begin{array}{r}4.81\\6.03\\\underline{+\ 11.28}\end{array}$$

d) $$\begin{array}{r}82\\65\\37\\42\\65\\38\\+\underline{12}\end{array}$$

e) $$\begin{array}{r}6\\4\\21\\935\\48\\5\\306\\+\underline{\ 201}\end{array}$$

2. a) $$\begin{array}{r}281\\\text{x}\underline{347}\end{array}$$

b) $$\begin{array}{r}3.09\\\underline{\text{x}\ \ 25}\end{array}$$

c) $$\begin{array}{r}601\\\underline{\text{x}3.8}\end{array}$$

d) $$\begin{array}{r}218\\\text{x}\underline{.009}\end{array}$$

3. $16\overline{)4280}$ $23\overline{)6821}$ $61\overline{)122,488}$

OCCUPANCY

SINGLE FAMILY	✓	HOTEL	
TWO FAMILY		THEATER	
APARTMENTS		GAS STATION	
STORES		WAREHOUSE	
OFFICES		INDUSTRIAL	
COM. GARAGE		FARM	

DESIGN

MODERN	
RANCH TYPE	
CONVENTIONAL	
DESIGN FACTOR	%
GRADE FACTOR	%

CONSTRUCTION

FOUNDATION		FLOORS	B	1	2	3
CONCRETE						
CONCRETE BLOCK		CEMENT	✓			
BRICK OR STONE	✓	EARTH				
PIERS		PINE		✓	✓	
BASEMENT AREA FULL	✓	HARDWOOD				
½ ¼ ¾		ASPH. TILE				
NO BASEMENT						
		ATTIC STRS. & FLOOR	N			

WALLS		INTERIOR FINISH	B	1	2	3
[illegible]						
[illegible]						
[illegible]		PINE				
WOOD SHINGLES		HARDWOOD				
ASPHALT SHINGLES		PLASTER		✓	✓	
ASBESTOS SHINGLES		FIBER BOARD				
STUCCO ON FRAME		UNFINISHED	✓			
STUCCO ON MASONRY						
		FIN. BSMT. AREA				
BRICK VENEER	✓	FIN. ATTIC AREA				
[illegible]						
[illegible]		FIREPLACE				

		HEATING	
[illegible]		HOT AIR FURNACE	
		FORCED AIR FURNACE	✓
[illegible]		STEAM	
[illegible]		RADIANT HEATING	
[illegible]		HOT WAT. OR VAPOR	
[illegible]		PIPELESS FURNACE	
		NO HEATING	
[illegible]			
[illegible]		AUTO. BURNER	✓
[illegible]		UNIT HEATERS	
ASBESTOS SHINGLES		AIR CONDITIONING	
		PLUMBING	
[illegible]		BATH ROOM	✓
[illegible]		TOILET ROOM	
COMPOSITION	✓	WATER CLOSET	
[illegible]		KITCHEN SINK	✓
		STD. WATER HEATER	
FLOOR CONSTR.		AUTO. WATER HEATER	N
[illegible]		NO PLUMBING	
[illegible]			
[illegible]		TILING	
[illegible]		BATH FLR. & WSCT.	
[illegible]		TOILET FLR. & WSCT.	

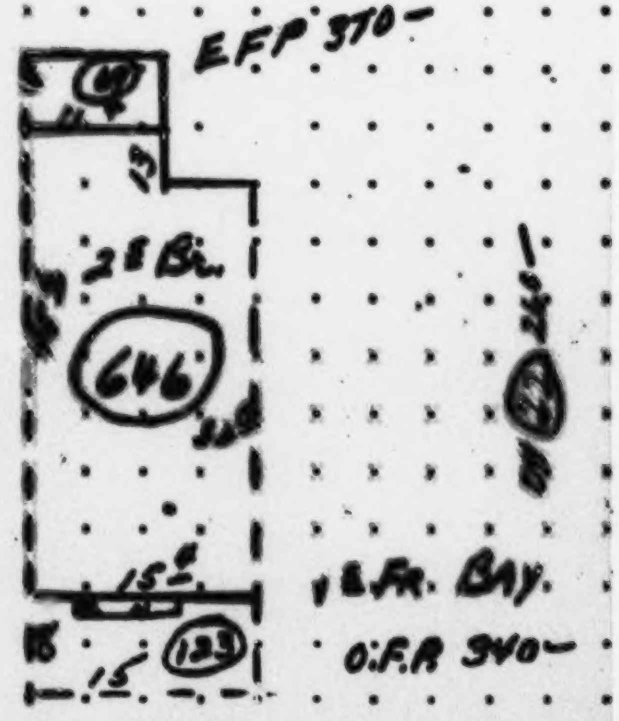
NO. OF ROOMS		LIGHTING	
[illegible]	1ST [illegible]	NO LIGHTING	
2ND 3	[illegible]		

COMPUTATIONS

UNIT	AMOUNT
646 S.F.	12070
ADD. & PCHS.	970
BSMT. AREA	—
WALLS 10%	-1210
FIN. BSMT.	
ATTIC	
HEATING	
PLUMBING	-70
MULTI-FAM	
TOTAL	11760
FACTOR -5%	-590
REPL. VALUE	11170

SKETCH

Tow.

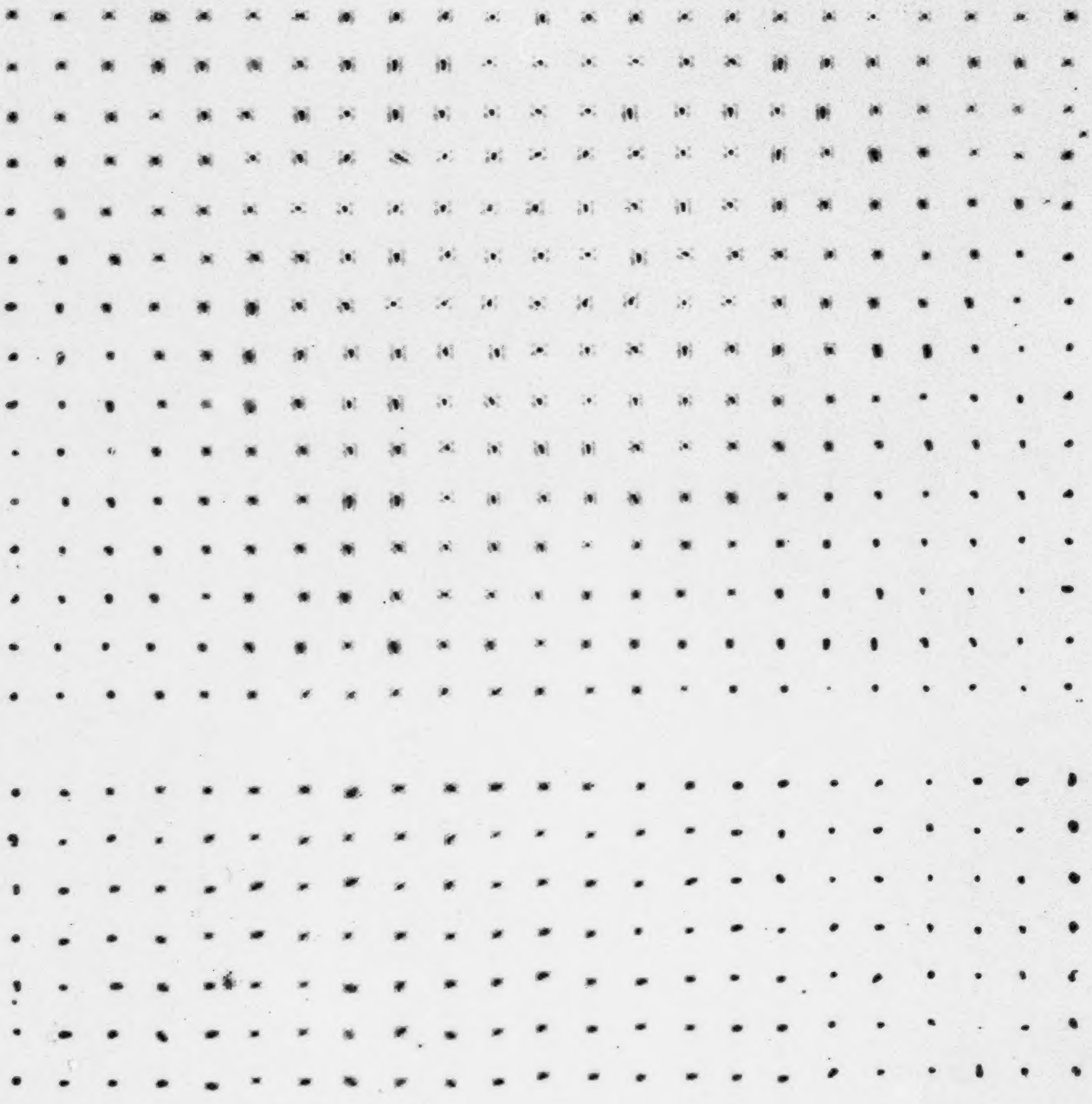


SUMMARY OF BUILDINGS

OCCUPANCY	TYPE	GRADE	AGE	REMOD	COND	REPL. VAL.	PHYS. DEPR.	PHYS. VAL.	SOUND VA
DWELLING	2 A.Br.	C	?		F	11170	45%	[illegible]	[illegible]
GARAGE	NONE								
COM. BLDG.									
INDUSTRIAL									
MISC. SHEDS									

DATE MEAS.	MEAS.	DATE LISTED	LISTED	PRICED	CHECKED	TOTAL VALUE BUILDINGS	6150
9/22/54	130	9/22/54	130				

GRADE DENOTES QUALITY OF CONSTRUCTION: A—EXCELLENT; B—GOOD; C—AVERAGE; D—CHEAP



WW 3TB

BUILDING RECORD

OCCUPANCY

SINGLE FAMILY	✓	HOTEL	
TWO FAMILY		THEATER	
APARTMENTS		GAS STATION	
STORES		WAREHOUSE	
OFFICES		INDUSTRIAL	
COM. GARAGE		FARM	

CONSTRUCTION

FOUNDATION		FLOORS	B	1	2	3
CONCRETE						
CONCRETE BLOCK		CEMENT	✓			
BRICK OR STONE	✓	EARTH				
PIERS		PINE		✓	✓	
BASEMENT AREA FULL	✓	HARDWOOD				
¼ ½ ¾		ASPH. TILE				
NO BASEMENT						
		ATTIC STRS. & FLOOR				N

WALLS		INTERIOR FINISH	B	1	2	3
BEVEL SIDING						
WIDE SIDING						
DROP SIDING		PINE				
WOOD SHINGLES		HARDWOOD				
ASPHALT SHINGLES		PLASTER		✓	✓	
ASBESTOS SHINGLES		FIBER BOARD				
STUCCO ON FRAME		UNFINISHED	✓			
STUCCO ON MASONRY						
		FIN. BSMT. AREA				
BRICK VENEER	✓	FIN. ATTIC AREA				
BRICK ON MASONR						
STONE ON MASONI		FIREPLACE				
HOLLOW TILE						
CONC. OR CIND. E						
FRAME CONSTRUC						
ARTIFICIAL STONE						
STRUCTURAL GLASS						
PLATE GLASS						

WW3TA

		HEATING	
		HOT AIR FURNACE	
		FORCED AIR FURNACE	✓
		STEAM	
		RADIANT HEATING	
		HOT WAT. OR VAPOR	
		PIPELESS FURNACE	
		NO HEATING	
ROOFING			
ASPHALT SHINGLES		AUTO. BURNER	✓
WOOD SHINGLES		UNIT HEATERS	
ASBESTOS SHINGLES		AIR CONDITIONING	
SLATE		**PLUMBING**	
TILE		BATH ROOM	✓
METAL		TOILET ROOM	
COMPOSITION	✓	WATER CLOSET	
ROLL ROOFING		KITCHEN SINK	✓
		STD. WATER HEATER	
FLOOR CONSTR.		AUTO. WATER HEATER	N
WOOD JOIST		NO PLUMBING	
STEEL JOIST			
MILL TYPE		**TILING**	
REIN. CONCRETE		BATH FLR. & WSCT.	
STEEL FRAME		TOILET FLR. & WSCT.	

NO. OF ROOMS		LIGHTING
BSMT.	1ST 3	NO LIGHTING
2ND 3	3RD	

DESIGN

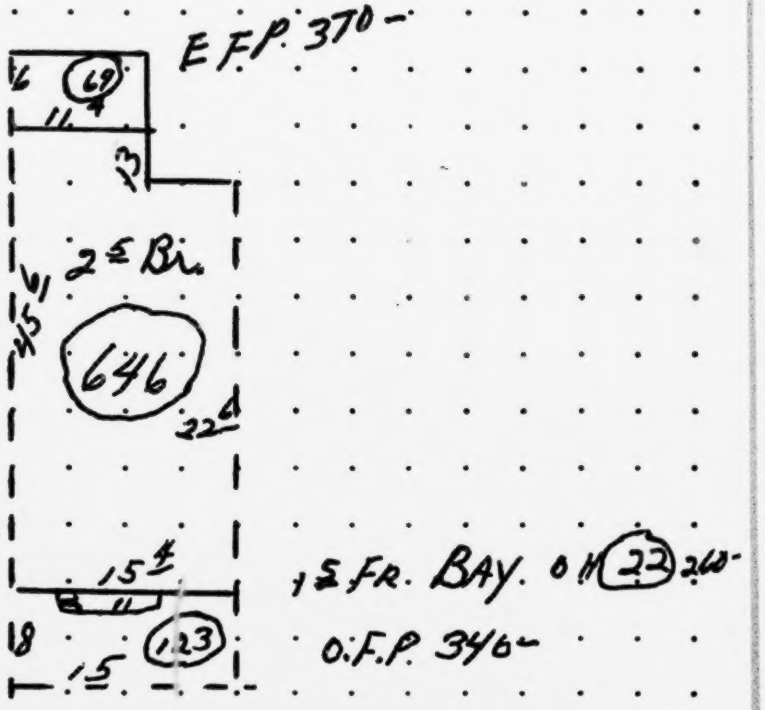
MODERN	
RANCH TYPE	
CONVENTIONAL	
DESIGN FACTOR	%
GRADE FACTOR	%

COMPUTATIONS

UNIT	AMOUNT
646 S.F.	12070
ADD. & PCHS.	970
BSMT. AREA	—
WALLS 10%	- 1210
FIN. BSMT.	
ATTIC	
HEATING	
PLUMBING	- 70
MULTI-FAM	
TOTAL	11760
FACTOR 5%	- 590
REPL. VALUE	11170

SKETCH

Ten.



SUMMARY OF BUILDINGS

OCCUPANCY	TYPE	GRADE	AGE	REMOD	COND	REPL. VAL.	PHYS. DEPR.	PHYS. VAL.	FUNCT. DEPR.	SOUND VAL.
DWELLING	2 S Br.	C	?		F	11170	45%	6140		6140
GARAGE	NONE									
COM. BLDG.										
INDUSTRIAL										
MISC. SHEDS										

DATE MEAS.	MEAS.	DATE LISTED	LISTED	PRICED	CHECKED	TOTAL VALUE BUILDINGS
9/22/54	130	9/22/54	130			6140

PROPERTY RECORD CARD

WILMINGTON

INDEX NUMBER 1520 2205	BLOCK 1774	LOT 62

15 Jessup St.

RECORD OF OWNERSHIP	DATE	STAMPS	SALE PRICE

LAND VALUE COMPUTATIONS AND SUMMARY

FRONTAGE	DEPTH	DEPTH FACTOR	UNIT VALUE	ACTUAL VALUE	UNIT VALUE	ACTUAL VALUE	TOTAL	TAX VALUE	TOTAL	TAX VALUE
15	75	.88	42	37			550			
WW4TA										
CORNER INFLUENCE										
TOTAL VALUE LAND							550			
TOTAL VALUE BUILDINGS							6,40			
TOTAL VALUE LAND & BUILDINGS							6690			

ASSESSMENT RECORD

1954	LAND	225
	BLDGS.	2175
	TOTAL	2400
1955	LAND	385
	BLDGS.	4298
	TOTAL	4683
19	LAND	
	BLDGS.	
	TOTAL	
19	LAND	
	BLDGS.	
	TOTAL	
19	LAND	
	BLDGS.	
	TOTAL	
19	LAND	
	BLDGS.	
	TOTAL	
19	LAND	
	BLDGS.	
	TOTAL	
19	LAND	
	BLDGS.	
	TOTAL	

PROPERTY FACTORS

TOPOGRAPHY		IMPROVEMENTS		STREET OR ROAD		DISTRICT	
LEVEL	✓	CITY WATER		PAVED	✓	IMPROVING	
HIGH		SEWER		SEMI-IMPROVED		STATIC	✓
LOW		GAS		UNIMPROVED		DECLINING	
ROLLING		ELECTRICITY					
SWAMPY		ALL UTILITIES	✓	SIDEWALK	✓	BLIGHTED AREA	

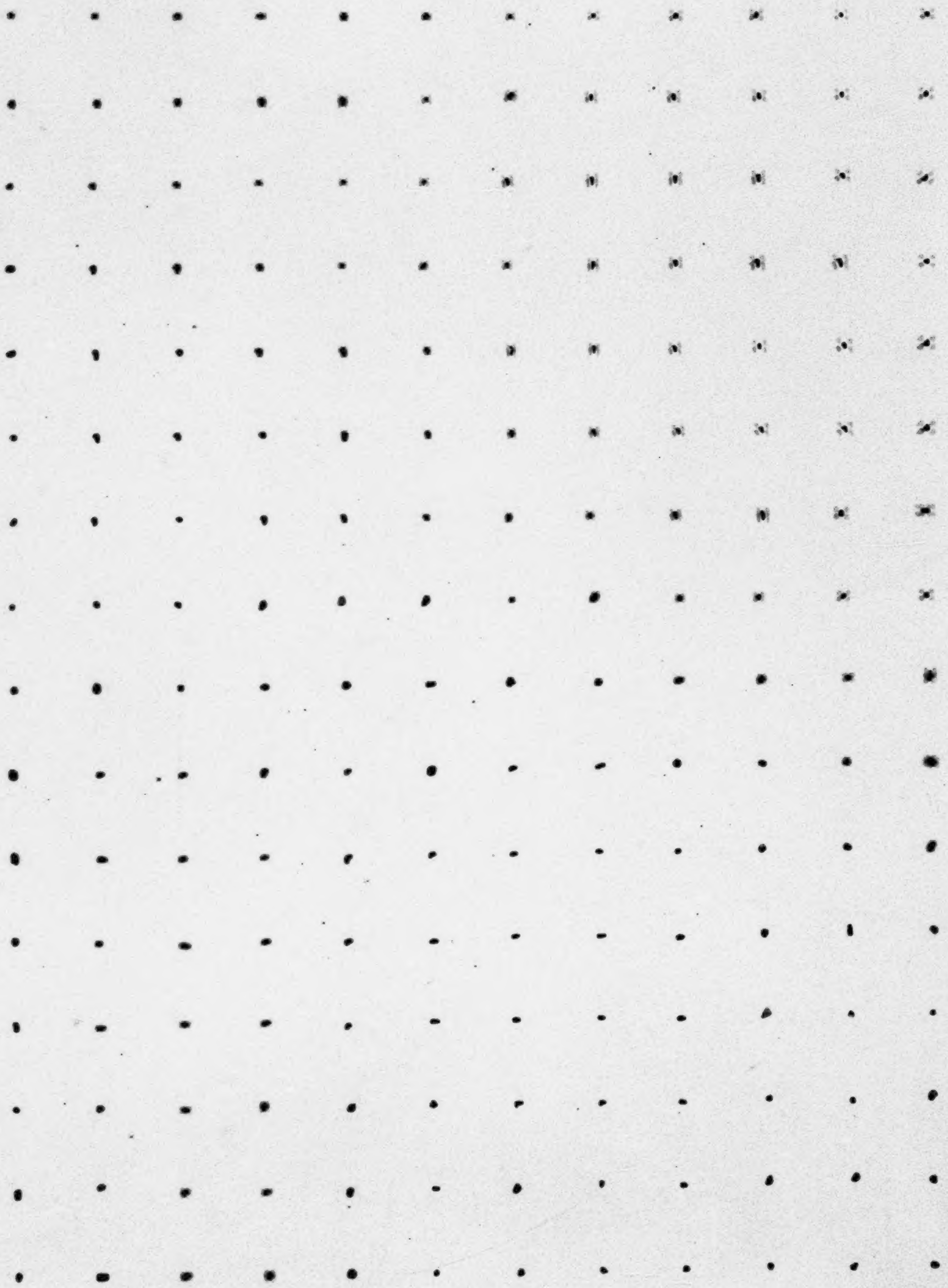
BUILDING PERMIT RECORD

PERMIT NO.	DATE
COST	CHECKED BY
PROJECT	

MEMORANDA

COLE-LAYER-TRUMBLE COMPANY APPRAISERS & ENGINEERS

REVALUATION OF WILMINGTON, DELAWARE



WW3TC

Name Section Date

Worksheet #3

The dotted sheets are rectangular arrays of points. These sheets reproduce an actual portion of a file card. Clerks draw to scale on these points the ground plan of a resident's property.

1. Use a ruler to draw straight lines. A pair of points are $\frac{1}{4}$" apart. If the scale is $\frac{1}{4}$" = 10', draw a rectangular plot of land 160' long and 90' wide.

2. Draw a plot of land that measures 180' long and 100' wide. In one corner of the plot outline a house the plan of which is 40' wide and 60' long.

3. If $\frac{1}{4}$" on paper represents 10' actually, then $\frac{1}{16}$" on your ruler would be $2\frac{1}{2}$' in actual measurement of the property. Draw a plot of ground that measured 125' by 25'. Show a house on this property 40' by 25'. The front of the house is located 20' from the front edge of the property.

4. Draw your own plan of the house where you live, or of an imaginary house and yard. As an assignment you could get actual measurements, or you can make them up before you draw such a plan.

WORKSHEET

INDEX NUMBER 1520 2205 | BLOCK 1774 | LOT 62

15 Jessup St.

RECORD OF OWNERSHIP	DATE	STAMPS	DAL

LAND VALUE COMPUTATIONS AND SUMMARY

FRONTAGE	DEPTH	DEPTH FACTOR	UNIT VALUE	ACTUAL VALUE	UNIT VALUE	ACTUAL VALUE	TOTAL	TAX VALUE	TOTAL	TAX VALUE
[illegible]	[illegible]	[illegible]	42	.37			550			

TOTAL VALUE LAND	[illegible]
TOTAL VALUE BUILDINGS	[illegible]
TOTAL VALUE LAND & BUILDINGS	[illegible]

PROPERTY FACTORS

TOPOGRAPHY		IMPROVEMENTS		STREET OR ROAD		DISTRICT	
LEVEL	✓	CITY WATER		PAVED	✓	IMPROVING	
HIGH		SEWER		SEMI-IMPROVED		STATIC	✓
LOW		GAS		UNIMPROVED		DECLINING	
ROLLING		ELECTRICITY					
SWAMPY		ALL UTILITIES	✓	SIDEWALK	✓	BLIGHTED AREA	

BUILDING PERMIT RECORD

PERMIT NO.	DATE
COST	CHECKED BY
PURPOSE	

REVALUATION OF WILMINGTON, DELAWARE

Teacher Suggestions #4

Various forms are inserted to make this particular job as clerk more realistic. The teacher also has to use some imagination. On the Property Record Card, Frontage means width in feet across the front of the property. Depth is the length of the property in feet. The Depth Factor is a percent taken from the Depth Table. Let the unit value, which is taken from a map of the neighborhood, remain 42. Multiply the Depth Factor, which students can look up on the Depth Table, times 42, and fill in the Actual Value.

The Payroll Check forms are actual copies, and are supplied at the end of this unit for purposes of discussion and imaginatively completing.

Name Section Date

Worksheet #4

1. Use a ruler to diagram the following fractions. The denominator tells you how many equal parts to make out of the whole length. The numerator tells you how many of these to "fill in".

   a) $\frac{3}{4}$
   b) $\frac{1}{2}$
   c) $\frac{2}{3}$
   d) $\frac{5}{16}$
   e) $\frac{3}{8}$
   f) $\frac{7}{8}$
   g) $\frac{1}{16}$
   h) $\frac{1}{4}$
   i) $\frac{1}{7}$
   j) $\frac{1}{9}$

2. Dividing the denominator of a fraction into its numerator gives you an equivalent decimal fraction. Writing a decimal over the correct multiple of 10 gives you a fraction again.

   a) $\frac{3}{4}$; $\begin{array}{r} 0.75 \\ 4\overline{)3.0} \end{array}$; 0.75
   b) $\frac{1}{4}$; ______
   c) $\frac{1}{8}$; ______
   d) $\frac{1}{2}$; ______
   e) $\frac{1}{16}$; ______
   f) 0.75; $\frac{75}{100} = \frac{3}{4}$
   g) 0.25; ______
   h) 0.125; ______
   i) 0.5; ______
   j) 0.0625; ______

DEPTH TABLE & CORNER INFLUENCE TABLE

BUSINESS OR RESIDENTIAL LOTS

WORKSHEET, #48

Following table shows percentage of front foot value for lots 2 feet to 400 feet depth.

DEPTH TABLE

Feet of Depth	100' Standard Percentage	Feet of Depth	100' Standard Percentage
2	7	82	92
4	13	84	93
6	18	86	94
8	23	88	95
10	27	90	96
12	30	92	97
14	34	94	98
16	37	96	98
18	40	98	99
20	43	100	100
22	45	105	102
24	47	110	104
26	49	115	106
28	51	120	108
30	53	125	109
32	55	130	111
34	57	135	112
36	59	140	113
38	61	145	114
40	63	150	115
42	65	160	117
44	67	170	118
46	69	180	120
48	71	190	121
50	72	200	122
52	74	225	124
54	76	250	126
56	77	275	128
58	79	300	129
60	80	325	130
62	81	350	131
64	83	375	134
66	83	400	134
68	85		
70	86		
72	87		
74	88		
76	89		
78	90		
80	91		

CORNER INFLUENCE TABLE

(Frontage on Main Street is Depth for Side Street)

Depth	Percentage
1	4
2	6
3	8
4	10
5	12
6	14
7	16
8	18
9	20
10	21
11	22
12	24
13	25
14	27
15	28
16	29
17	31
18	32
19	33
20	34
22	36
24	38
26	40
28	42
30	44
32	46
34	47
36	48
38	49
40	50
42	51
44	52
46	53
48	54
54	56
62	58
70	60
80	62
90	64
100	65

WW4 B

COLE-LAYER-TRUMBLE COMPANY *APPRAISAL ENGINEERS* DAYTON, OHIO

Name Section Date

Worksheet # 4C

Decimal Review (Exercises to supplement remarks by teacher)

4 3 2 1 • 1 2 3 4 ten thousandths

Thousands Hundreds tens ones Tenth Hundredths thousandths

The 1 in the tenth place means $\frac{1}{10}$

The 2 in the hundredths place means $\frac{2}{100}$

The 3 in the thousandths place means $\frac{3}{1000}$

The 4 in the 10-thousandths place means $\frac{4}{10,000}$

I. Give the missing word and number

28.45 The 2 in the ________ place means____________

28.45 The 4 in the ________ place means____________

531.64 The 5 in the________ place means____________

531.64 The 4 in the ________ place means____________

2876.354 The 2 in the______ place means____________

2876.354 The 4 in the______ place means____________

5.04 The 4 in the ________ place means____________

26.008 The 8 in the ________ place means____________

.0605 The 5 in the ________ place means____________

II. Give the missing numerator and denominator.

a. $3.5 = 3 + \frac{5}{\quad}$

b. $64.7 = 64 + \frac{\quad}{10}$

c. $6.29 = 6 + \frac{2}{\quad} + \frac{9}{\quad}$

d. $5.08 = 5 + \frac{\quad}{10} + \frac{\quad}{100}$

e. $6.079 = 6 + \frac{7}{\quad} + \frac{9}{\quad}$

f. $.367 = \frac{3}{\quad} + \frac{6}{\quad} + \frac{7}{\quad}$

Name Section Date

Worksheet #4D

Decimal exercises:

1. Give the missing numerator:

a. $8.6=8\frac{}{10}$

b. $7.9=7\frac{}{10}$

c. $.4=\frac{4}{}$

d. $.05=\frac{}{100}$

e. $20.7=20\frac{}{10}$

f. $56.8=56\frac{}{10}$

g. $17.6=17\frac{6}{10}$

h. $156.4=156\frac{}{10}$

i. $15.04=15\frac{}{100}$

j. $9.07=9\frac{}{100}$

k. $1.007=1\frac{}{1000}$

l. $.008=\frac{}{1000}$

II. Write each rational number as in the examples

Example 1: $13.28=13+\frac{2}{10}+\frac{8}{100}$

Example 2: $4.725=4+\frac{7}{10}+\frac{20}{100}+\frac{5}{1000}$

a. $4.62=$

b. $.076=$

c. $4.004=$

d. $9.064=$

e. $9.264=$

f. $70.064=$

g. $73.2=$

III. Give the decimal for each sum

a. $7+\frac{2}{10}=$

b. $7+\frac{2}{10}+\frac{6}{100}+\frac{7}{1000}=$

c. $7+\frac{5}{100}+\frac{2}{1000}=$

d. $9+\frac{6}{100}$

e. $8+\frac{0}{10}+\frac{0}{100}+\frac{6}{1000}$

f. $\frac{2}{10}+\frac{3}{100}+\frac{6}{1000}+\frac{7}{10000}=$

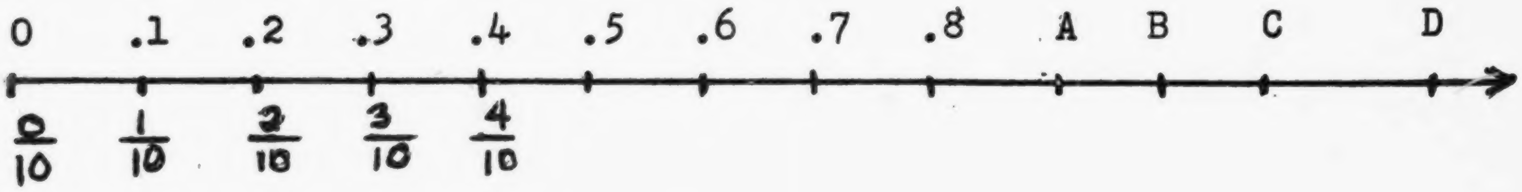
g. $\frac{5}{10}+\frac{3}{100}+\frac{8}{10000}+\frac{9}{100000}=$

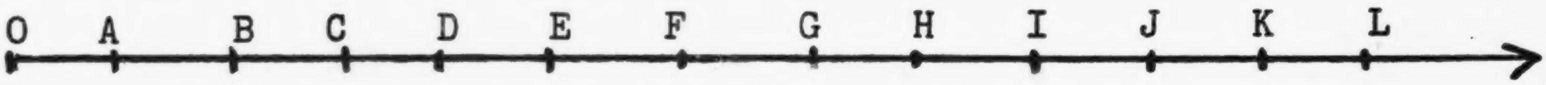
h. $100{,}000+\frac{1}{100000}=$

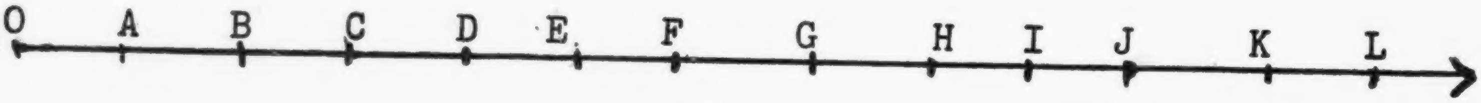
i. $1000+\frac{1}{1000}+\frac{1}{1{,}000{,}000}=$

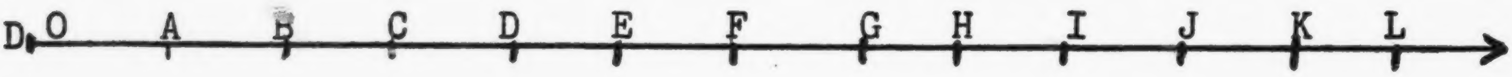
Name Section Date

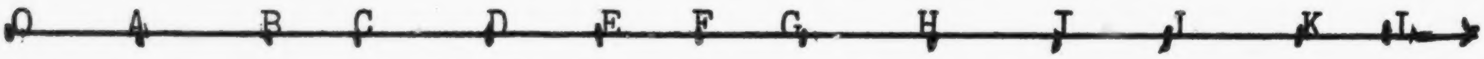
Worksheet #4E

A

0
.1
.2
.3
.4
.5
.6
.7
.8
A
B
C
D
$\frac{0}{10}$
$\frac{1}{10}$
$\frac{2}{10}$
$\frac{3}{10}$
$\frac{4}{10}$

B

O
A
B
C
D
E
F
G
H
I
J
K
L

C

O
A
B
C
D
E
F
G
H
I
J
K
L

D

O
A
B
C
D
E
F
G
H
I
J
K
L

E

O
A
B
C
D
E
F
G
H
I
J
K
L

Exercises:

1. Give a decimal for points A through D in example A

(Answer):

2. Examples B shows part of example A magnified 10 times
   a. Give fractions with denominator 100 that could be used to label the points at 0 and $\frac{1}{10}$

(Answer):

   b. Give a decimal for each point in example B

(Answer):

Name Section Date

Worksheet #4F

3. Example C shows part of example B magnified 10 times
   a. Give fractions with denominator 1000 that could be used to label the points 0 and $\frac{1}{10}$

   b. Give a decimal for each point in example c

4. Give a decimal for each point in examples D and E

5. Write an improper fraction to replace each decimal

   3.1 2.02 5.3 4.12 3.057

Inequalities--decimal

I. Give the correct sign (<, =, or >) for each space

5_______.3

18.7_______18.9

47.6_______46.6

.28_______38.9

.4_______.04

.30_______.30

28.9_______29.1

36.08_______36.80

.3_______.30

.004_______.04

.004_______.04

4.009_______4.090

.080_______.08

.059_______.590

1.010_______.999

II. Give the number that is one tenth more than:

.3 .9 1.5 3.8 .004 5.95

____ ____ ____ ____ ____ ____

Name Section **Date**

Worksheet #4G

III. Give the number that is one hundredth more than:

.05 .09 .29 .037 .6 .99 99.99

___ ___ ___ ___ ___ ___ ___

IV. Give the number that is one thousandth more than

.003 .009 .569 .6 .38 .009 .999

___ ___ ___ ___ ___ ___ ___

V. Give the next three decimals in each sequence.

.6, .7, .8, __________, __________, __________.

.08, .09__________, __________

.007, .008__________, __________

.85, .90, .95, __________, __________, __________.

VI. Rewrite the number in each series in the order of their size:

Largest First:		Smallest First:	
.20	.03	.05	.005
.60	.59	.06	6.6
.3	.04	1	1.8
.125	.15	.33	.03
.608	.6	.8	.08
.167	.30	.375	.07

Name Section Date

Worksheet #4H

Computing Replacement Value of Property

Unit	Area (sq. ft.)	Value (sq. ft)	Amount
Area of Land		$20.00	
Additions to the Property		22.00	
Basement		10.00	
Attic		5.00	
Total			
Depreciated Items	Poor (6% of total)	Fair (4% of Total)	
Heating			
Plumbing			
Replacement Value			

After a discussion of likely figures for areas and conditions, the student can make up figures for a possible real home, and determine the replacement value of his own property.

Teacher Suggestions #5

1. To be able to handle addition, subtraction and multiplication of linear measurements, in feet and inches, is important in this particular job. Measurements brought in by the field representative are in feet and inches, and must be converted to fractions for multiplying. Areas are found for figures which are usually composite.

2. Clerks use the calculators in the office for figuring and checking their handwork. It may be possible for students to visit the Business Department of their school for formal instruction in the use of calculators. Even though the machines are available in the office, clerks must know how to do all problems by hand.

Name Section Date

Worksheet #5

1. a) 12 ft. 4in
9 ft. 8in

b) 10 ft. 8 in
10 ft. 3 in
6 ft. 1 in
5 in

c) 1ft. 6in
6ft. 8 in
12ft.
10ft. 4in
8ft. 5in

d) 60yrds. 2ft.
10 yrd.
60 yrd. 1ft.
80 yrd. 2ft.

2. a) 10 ft. 10 in
- 8 ft. 8 in

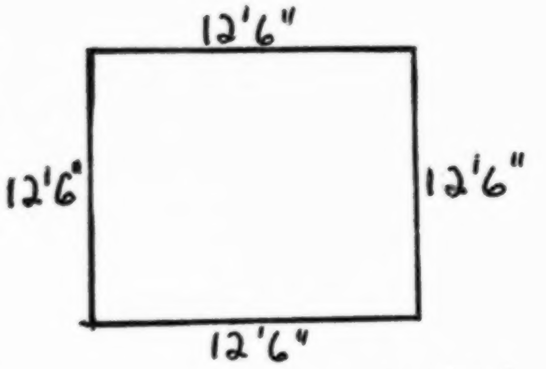
b) 12 ft. 4 in.
- 10 ft. 8 in.

c) 21ft. 10in
-20ft. 11in

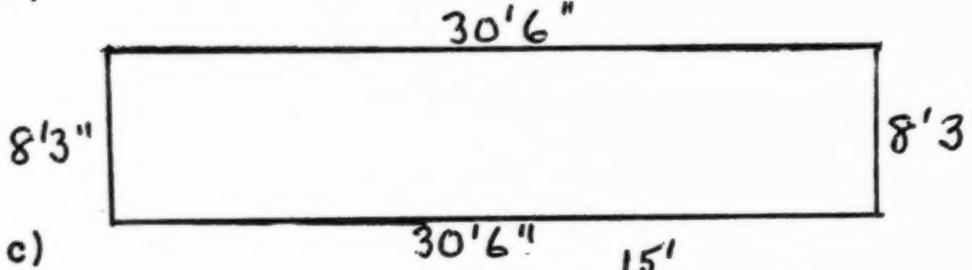
d) 3yrds, 2ft, 6in
-1 yds, 2ft, 8in

3. Find the area to the nearest square foot.

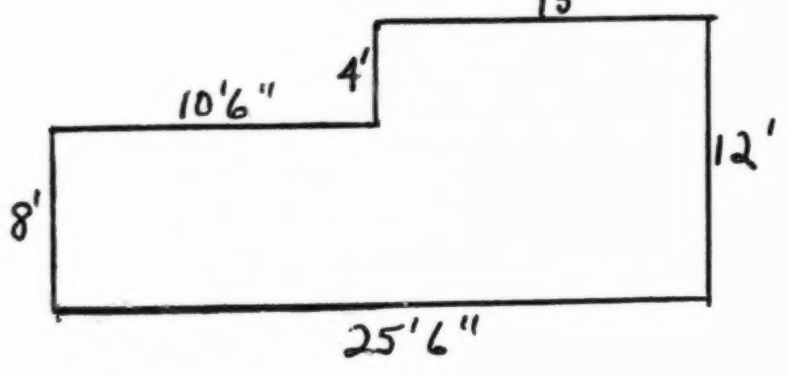
a)


12'6"
12'6"
12'6"
12'6"

b)


30'6"
8'3"
8'3"
30'6"

c)


15'
4'
10'6"
12'
8'
25'6"

Name Section Date

Worksheet #6

These problems might be done on a calculator, but when such is not available it is necessary to perform the operations by hand.

1. Add the following figures; 236;478;2105;3402;113;12; 10005.

2. Add these decimal numbers: 1.08; 50.6; 700.34;10; 48009.6; and 100.

3. Subtract 2.13 from 86.005

4. Subtract 800.11 from 6913.2

5. Subtract 0.034 from 28.05

6. $\begin{array}{r} 1135 \\ \times\ \underline{682} \end{array}$

7. $\begin{array}{r} 3.056 \\ \underline{\times\ 2.18} \end{array}$

8. $.21\overline{)1.3251}$

Teacher Suggestions #7

These last pages of the Unit include the ideas of a special demand arising in the office one day, an examination of the first pay-check to see where all the money went on deductions, and a concluding test when the question might be asked, "Can you now pass the test and get the job?"

The student can imagine one day in the Office when a lawyer drops in to ask for immediate information. This puts the "employee" under pressure to get correct arithmetic done. Deductions from the pay-check can be discussed with the class to see if they appreciate deductions for taxes; savings, insurance, etc. The test at the end is designed for the teacher to make a comparison with the test which the "applicant" made the first day, and for the student to feel that he is learning something and having success with it.

Name Section Date

Worksheet #7

1. A lawyer drops in to the tax office one day and wants to know the area of a certain property. The clerk looks into the file and has to do the following things:

   a) Multiply 20'6" by 40'

   b) Multiply 150' by 60'

   c) Add the above results and get the answer to the nearest square foot.

2. If the city tax is $3.706 per $100 assessed value, find the taxes on the following properties to the nearest cent.

   a) $5100 assessed value

   b) 10,500 assessed value

   c) 11,550 assesses value

WORKSHEET, #8A

CITY OF WILMINGTON
PAYROLL CHECK

30204

62-4
311

DEPARTMENT	MON.	DAY	YEAR

AMOUNT THIS CHECK
$

PAY TO THE ORDER OF

VOID

PAYROLL ACCOUNT

FARMERS BANK
of the
STATE OF DELAWARE
WILMINGTON, DEL.

CITY TREASURER OR DEPUTY

⑈030204⑈ ⑆0311⑉0004⑆ 008⑉211⑉9⑈

EMPLOYEE'S PAY STATEMENT FROM:

CITY OF WILMINGTON

30204

PAY PERIOD ENDING			GROSS EARNINGS	REGULAR DEDUCTIONS				MISC. DEDUCTIONS		NET EARNINGS
MON.	DAY	YR		FEDERAL	STATE TAX	Police/Fire Pen. or F.I.C.A.	BLUE CROSS	AMOUNT	CODE	

VOID

MISCELLANEOUS CODE

1. U.S. BOND DEDUCTION
2. PENSION OWED
3. UNITED COMM. FUND
4. DEATH BENEFITS
5. SPECIAL INSURANCE
7. BA[illegible] PENSION
9. CREDIT UNION
11. FIREMEN UNION DUES
12. POLICE UNION DUES
13. CITY EMPLOYEE'S UNION DUES
15. REIMBURSEMENT OVER PAY
17. ATTACHMENT
19. FAMILY COURT

PLEASE DETACH AND RETAIN FOR YOUR RECORDS

STUB – DO NOT CASH

ALLIED EGRY BUSINESS SYSTEMS

WW8A

Name **Section** **Date**

Worksheet #8 B

Pay day rolls around and the clerk in the tax office looks forward to the first pay-check. However the full amount is not there. Do the following problems making the deductions which are indicated.

1. From a salary of $300 per month deduct $29.50 for Federal Taxes, 1.2% for State taxes and 4.4% for Social Security.

2. From a salary of $400 per month deduct the same items as above plus $6.25 for a Savings Bond.

3. From a salary of $450 per month deduct the same as in problem 1 plus $2.00 for United Fund and $5.00 for the Credit Union.

Name Section Date

Worksheet #8C

Percent simply means "hundredth". 60% means therefore $60 \times \frac{1}{100}$, or $\frac{60}{100}$, or $\frac{3}{5}$, or even 0.6. It is relatively easy to go "back and forth" between fractions, decimals, and percents. Fill in correctly the following form and note these relations.

Common Fractions	Decimals	Percents
$\frac{3}{8}$		
	0.8	
		12%
	1.2	
$1\frac{1}{2}$		
	0.1875	
		100%
	0.01	
$\frac{5}{16}$		
		0.1%

Answer Sheet

Page WW1.

1.a) 92,626 b) 2255 c) 79.89 d) 57.485

2.a) 3.8478 b)2.4332 c)3.2 d) 1.03

3.a) P=45'6", A=$128\frac{5}{8}$ sq. ft.; P=57', A=130 sq. ft.

4. 1500

5. 64

Page WW2

1.a)118,972 b)3,370 c)22.12 d) 341 e) 1,526

2.a)97,507 b)77.25 c)2,283.8 d)1.962

3. $267\frac{1}{2}$

4. $296\frac{13}{23}$

5. 2,008

Page WW5

1.a) 22' b)27'5" c)38'11" d)211 yd, 2 ft.

2.a)2'2" b)1'8" c) 11" d)1yd, 2ft, 10 in.

3.a)156 sq.ft. b)252 sq. ft. c)264 sq. ft.

Page WW6

1. 16,351
2. 48,871.62
3. 83.875
4. 6,113.09
5. 28.016
6. 774,070
7. 6.66208
8. 6.31

Answer Sheet

Page WW7

1.a)820 sq.ft. b)9,000 sq. ft. c)9820 sq.ft.

2.a)$189.01 b)$389.13 c)$428.04

Page WW8

1. $253.70
2. $341.85
3. $388.30

Page WW9

1. 7747
2. 914.4
3. 86.265
4. 3.1
5. P=90'; A=351 sq. ft.
6. $76.95
7. 2 hours

Name Section Date

Worksheet #9

This test is similar to the one on the first day. Can you do better on this test, and thus be more sure of "getting the job".

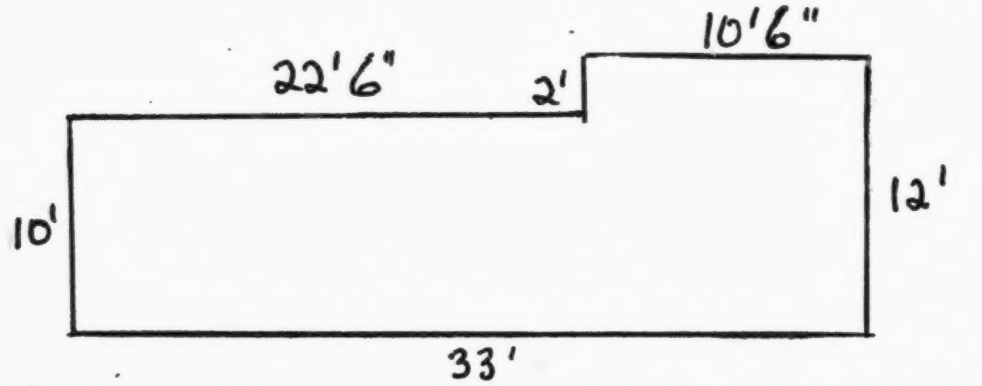
1. $\begin{array}{r} 3005 \\ 3614 \\ +\underline{1128} \end{array}$

2. $\begin{array}{r} 605.1 \\ -\underline{309.3} \end{array}$

3. $\begin{array}{r} 2.13 \\ \times\underline{40.5} \end{array}$

4. $2.9\overline{)8.99}$

5. Find the perimeter and area of this figure



6. There are 2850 square feet in a certain property. What is its value at $ .03 per square foot? If the property were reduced by 10%, what would be the new value?

7. Of your 8 hour day, 10% is spent in typing, 60% in filing, 5% in interviews. How much time remains?

8. A jet flies 400 miles in 45 minutes. How long, in hours and minutes, will it take to fly 1000 miles?

Introduction to Unit on Practical Nursing

The mathematics covered in this unit includes work with the four basic operations of arithmetic, fractions, decimals, and percentage. Simple graphing might also be related to the keeping of charts. One textbook "Basic Pharmacology for Nurses" by Jessie E. Squire and "Mathematics for Nursing Science," by S. I. Lipsey, are good references. To make the unit realistic, a field trip to a hospital might be arranged to see Practical Nurses on duty. Also certain measuring devices such as beakers, flasks, syringes, might be signed out for a vivid demonstration of the tools of the profession.

Practical Nurses are expected to be high school graduates who have passed a State Board Examination. This Examination includes basic arithmetic. Practical Nurses may comprise one half, or more, of the nursing staff of a hospital, and have important jobs in private institutions and homes. They wear a uniform similar to that of a registered nurse but with a special insignia on the arm or cap.

Answers are on PN11TA, B, AND C.

Name Section Date

Worksheet #1

Sample questions taken from the State Board Examination for Practical Nurses.

1. Reduce the following fractions.

   1. $\frac{25}{100}$ 2. $\frac{7}{49}$ 3. $\frac{125}{300}$ 4. $\frac{54}{72}$ 5. $\frac{26}{160}$

2. Change to decimal fractions

   1. $\frac{3}{8}$ 2. $\frac{35}{100}$ 3. $\frac{70}{1000}$ 4. $\frac{3}{6}$ 5. $\frac{9}{10}$

3. Write in words a) 2.16 b) 0.0039 c) 33.1

   a)

   b)

   c)

4. Find the results of the following

   a) $\frac{1}{2} \div \frac{3}{16}$ b) $\frac{3}{4} \div \frac{21}{8}$ c) $\frac{\frac{2}{3}}{\frac{10}{24}}$

5. Find the results of these percent problems

   a) 3% of 500 b) 10% of 250 c) 0.1% of 70

6. a) If a quart equals 1000 cu. cent., 3 pints is ______________

   b) A drop of water weighs 1 grain. 40 grains is __________drops.

7. Write the Roman Numerals from 1 to 20 using a small "i".

Teacher Suggestions #1

These suggestions apply to several of the following Worksheets. In the variety of simple arithmetic problems which confronts a Practical Nurse the ability to handle fractions is the most prominent. Considerable time should be spent on fractions.

The Apothecaries' System can be made more interesting by referring to its history. Such remarks as, our symbol for pound "lb." comes from the latin word "libra" pounds, may be interesting. Obtain and show actual measuring devices such as balance scales, syringes, cups, and medicine droppers. Note that the conversion tables indicate approximate relationships. Results often need rounding.

The Practical Nurse should form the habit of using the English dictionary because, in addition to many problems which require reading, there are medical terms which require correct spelling, understanding, and pronounciation.

If possible a Practical Nurse, in uniform, might be invited to speak to the class and give demonstrations of aspects of her duties.

Name Section **Date**

Worksheet #2

1. An infant took $\frac{1}{2}$ oz. of formula and later, $\frac{3}{4}$ oz. How much short of the prescribed 3 oz. was this? __________

2. A druggist combined the contents of 3 flasks. If each one contained $2\frac{1}{4}$ oz, $3\frac{1}{8}$ oz, and $1\frac{1}{2}$ oz respectively, what was the total in the combination? __________

3. How many pints of blood must be donated if the patient needs $7\frac{1}{4}$ pints, and the blood bank has only $2\frac{3}{4}$ pints available? _______

4. A solution contains $3\frac{1}{8}$ oz of dextrose. How much dextrose would there be available in $2\frac{2}{5}$ flasks?____________

5. $\frac{1}{20}$ ounce of a drug was required for a patient. $\frac{1}{4}$ oz. was supplied in a bottle. $\frac{1}{3}$ of the bottle's contents was given to the patient. Was this enough? Answer Yes, or no, based on doing the necessary arithmetic.

6. How many $\frac{3}{4}$ grain doses are there in 9 grains?_________

7. Each bottle of water is to contain $4\frac{3}{8}$ oz of a certain chemical. If there are $62\frac{1}{2}$ oz of the chemical available, how many bottles can be prepared? ________________

8. In a dispensary 48 grains of a drug are ready for use. How many doses of $\frac{6}{100}$ grains can be prepared?____________

Name Section Date

Worksheet #3
Apothecaries' System

Household Units	Volume	Weight
1 drop of Water	1 minim, "m"	1 grain
1 teaspoon	1 dram, "ʒ"	60 grains
1 Tablespoon	4 drams	240 grains
1 Cup	64 drams	8 ounces

(Approximate Relationships)

1. $2\frac{1}{2}$ cups is ________ounces?

2. How many drops of water is one teaspoon?____________

3. 5 drams is ___________teaspoons?

4. 1 tablespoon is ___________drops of water?

5. 120 grains is ______________teaspoons?

6. 100 drams is __________cups, __________tablespoons,___________
____teaspoons?

Name Section Date

Worksheet #4

Metric System

Household Units	Volume	Weight
1 drop of water	$\frac{1}{15}$ c.c	$\frac{1}{15}$ of one gram
1 cup	250 c.c	250 grams
1 pint	500 c.c	500 grams
1 quart	1 liter	1000 grams

(Approximate Relationships)

1. 4 cups weigh_____________grams?

2. 1 liter is _____________c.c.?

3. $\frac{1}{15}$ gram is______________as a decimal fraction?

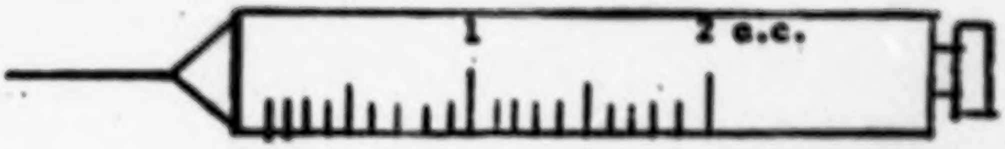
4. 1 drop of water is what decimal fraction of 1 c.c._______?

5. How many drops of water is in 1 quart____________________?

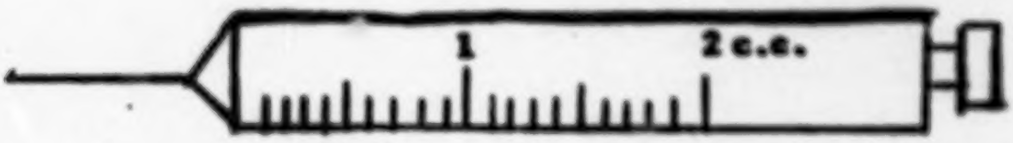
WORKSHEET #5

A. Hyperdermic Syringe

(a)

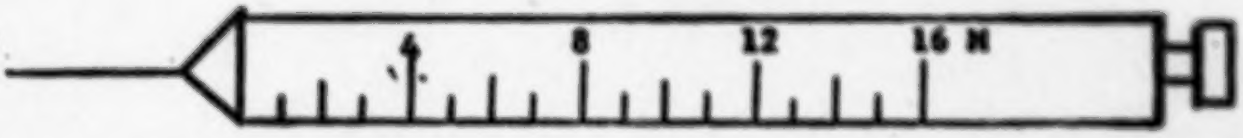


(b)

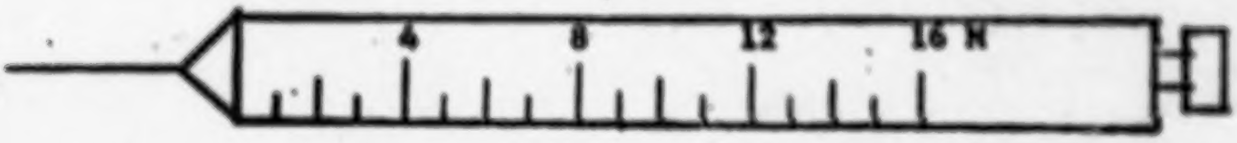


B. Tuberculin Syringe

(a)

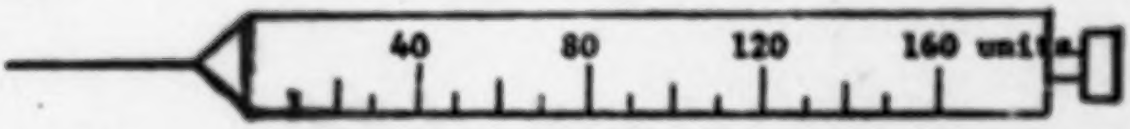


(b)

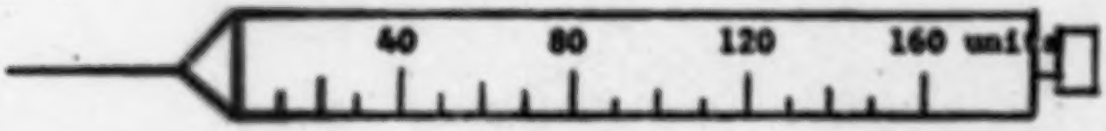


C. Insulin Syringe

(a)


40
80
120
160 units

(b)


40
80
120
160 units

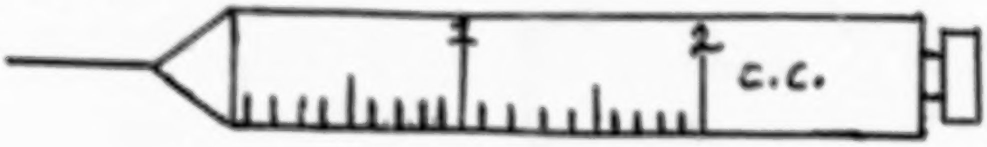
PNST

Name Section Date

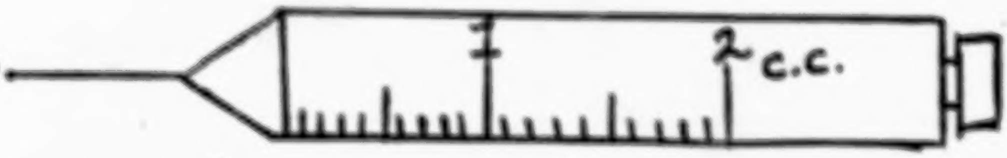
Worksheet #5

A. Hyperdermic Syringe

a.

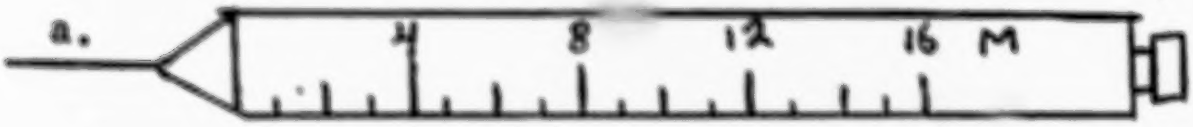


b.

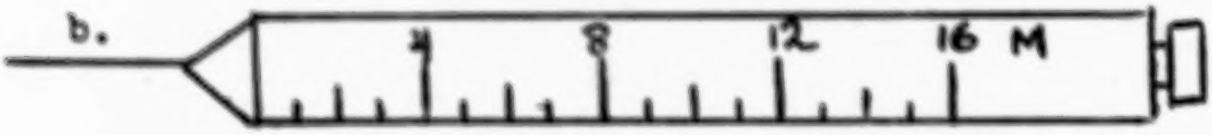


B. Tuberculin Syringe

a.

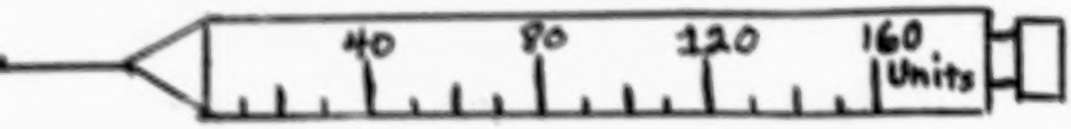


b.

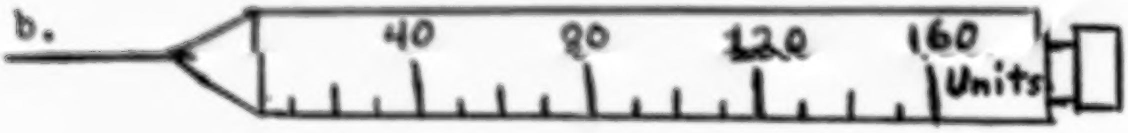


C. Insulin Syringe

a.


40
80
120
160
Units

b.


40
80
120
160
Units

Shade in the following volumes of liquid:

A. a) 0.7 c.c. b) 1.4 c.c.

B. a) 7 m b) 15 m

C. a) 60 units b) 125 units

Name Section Date

Worksheet #6

1. What is the ratio of 3 pints to 2 quarts?__________

2. A boric acid solution contains boric acid powder in the ratio of 1:500, which also means $\frac{1\text{ part}}{500\text{ parts}}$. If the solution weighs 250 oz., what would you expect the boric acid to weigh?

3. 8 oz of alcohol are in a solution in the ratio of $\frac{1}{20}$. What is the weight of the water in the solution?__________ What is the total weight of the solution?____________

4. Write the equivalent fractions

   a) $\frac{3}{4}$ b) $\frac{5}{7}$ c) $\frac{19}{20}$

5. Find the number that is missing in these proportions

   a) $\frac{2}{3} = \frac{8}{}$ b) $\frac{6\frac{1}{2}}{} = \frac{13}{70}$ c) $\frac{}{500} = \frac{3}{100}$

6. In the U.S. 22 people out of 100 are above average in intelligence. What is the ratio of above-intelligent to average-intelligent?__________ How many people would be above-average in a crowd of 500?____________in a crowd of 50?________________in a crowd of 750?__________________.

Name Section Date

Worksheet #7

1. If 3 inches of a ruler were broken off, what is the ratio of this broken-off portion to the whole 12 inches?__________ What is this ratio as a decimal fraction?____________ What is this decimal fraction expressed with 100 as a denominator? ________What is the percent broken-off?

2. A certain solution lost 30% of its water due to evaporation. If it originally weighed 500 grams, what weight was lost? ___________what weight remained?_____________

3. A 70% solution means 7 parts in 10 parts. What volume of alcohol is there in a 15 quart solution?________________

4. If a person is permitted 2500 calories per day, what percent has he "used up" if breakfast and lunch was 1000 and 1200 calories?__________________

5. A cupful is the 10% remaining part of a bottle of liquid soap. How much was in the bottle originally?__________

6. Change the following

   a) to percents, $\frac{4}{5}$ = __________; 1 $\frac{1}{2}$ = ______; $\frac{1}{3}$ = __________

   b) to simple fractions, 22%_______; 33$\frac{1}{3}$%_____; 200%_______

Name Section Date

Worksheet #8

A very common solution which is made by Practical Nurses is a "Normal Saline Solution." This solution is a measured amount of water having in it a measured amount of salt. The simplest rule for forming the solution is "1 teaspoon of salt to 1 pint of water." But a more careful rule is: ________

0.9% amount of water (c.c) = amount of salt (gm)

1. Find the amount of salt needed for 1,000 c.c of water.______
2. Find the amount of salt needed for 1 liter of water.________
3. If you had 18 gm of salt, how much of the saline solution would it be possible to make? ____________________________
4. How much salt is needed for a gallon of the solution?_______
5. 90 gm of salt would make what volume of solution?__________

Teacher Suggestions #9

Students need to be taught how to fill in chart forms neatly and correctly. Practical Nurses can have the duty of taking temperatures, and blood pressures, and recording the same on charts such as these.

Temperatures are taken every four hours and a dot placed in the middle of the small rectangle. The heads of the columns need to be filled in with imagined information. Note the dotted line as a normal body temperature for comparison.

Two pressures are recorded on the chart so that the graphs run along side by side for comparison. The range of the Cystolic pressure (pressure to the blood vessels) is 140 to 160 normally. The range of the Diastolic pressure (pressure as blood re-enters the heart) is 80 to 100. A red dot is used for Cystolic pressure; a blue dot to record Diastolic pressure. The teacher can use imaginary figures as problems. The value of the lesson is in teaching neatness and accuracy in graphing.

Name Section Date

Worksheet #9A

The following is information for graphing blood pressure of a patient on the Blood Pressure Chart. The student can fill in a fictitious patients' name. The dates and time should be done carefully. Assume the readings are every 4 hours. Use a red dot for Cystolic pressure and a blue dot for Diastolic pressure. Join the dots with straight lines at the end of the assignment.

Cystolic pressures are given first in each pair of numbers:

140/80; 142/80; 145/82; 150/85; 155/90; 160/90;

160/95; 158/90; 160/90; 155/90; 150/85; 140/80;

145/85; 150/85; 160/80; 170/80; 180/75; 150/80.

The student can produce fictitious figures for thermometer readings on a patient. Notice that temperatures can be read to $\frac{1}{10}$ of a degree. The dotted line, of course, is normal temperature of 98.6°

ORM NO. 115A

WORKSHEET, #9B

THE DELAWARE HOSPITAL

BLOOD PRESSURE CHART

IF NOT STAMPED WITH PLATE FILL IN ALL BELOW

ROOM NO.

NAME

MED. REC. NO.

MD

TE

UR

250	250
245	245
240	240
235	235
230	230
225	225
220	220
215	215
210	210
205	205
200	200
195	195
190	190
185	185
180	180
175	175
170	170
65	165
160	160
155	155
150	150
145	145
140	140
135	135
130	130
125	125
120	120
115	115
110	110
105	105
100	100
95	95
90	90
85	85
80	80
75	75
70	70
65	65
60	60
55	55
50	50
45	45
40	40
35	35
30	30
25	25
20	20
15	15
10	10
5	5

PN 9B

RM NO. 118A

WORKSHEET, #9C

THE DELAWARE HOSPITAL

GRAPHIC CHART

I - NOT STAMPED WITH PLATE FILL IN ALL BELO

ROOM NO.

NAME

MED. REC. NO.

MD

DATE													
SP. DAYS													
OST OP													
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	
HOURS													
104°													104
103°													103
102°													102
101°													101
100°													100
99°													99°
→													←
8°													8°
130													130
120													120
110													110
100													100
90													90
80													80
70													70
60													60
50													50
40													40
30													30
20													20
10													10
.P. S													
D													
SP. DRUG													
ORAL													
INFUSION													
TUBE													
TOTAL													
(SPECIFY ROUTE)													
TOTAL													
STOOLS													
WEIGHT						PN9C							

Name Section Date

Worksheet #10

Children and infants do not get the large dosages that adults do. There is a formula for figuring a Child's dose which looks like this:

$$\text{Child's dose} = \text{Adult Dose} \times \frac{\text{age}}{\text{age} + 12}$$

Now if 4 drams is considered an adult dose of castor oil, figure the child's dose for these ages

1. 4 years of age____________

2. 12 years of age___________

3. 6 years of age____________

The formula for figuring an Infant's Dose is:

$$\text{Infant's Dose} = \text{Adult Dose} \times \frac{\text{age in months}}{150}$$

If an adult dose of mineral oil is 480 minums, figure the results for the following ages.

1. 10 months

2. 15 months

3. 3 months

Teacher Suggestions #11

Answer Sheet

It is suggested that the teacher make up her own final test. The preview test, in the beginning of this unit, can be used over again. It can be saved, without giving it at first, and used for the final test.

Answers to Questions on the Worksheets

Worksheet #1

1. $\frac{1}{4}$; $\frac{1}{7}$; $\frac{1}{4}$; $\frac{3}{4}$; $\frac{13}{80}$

2. 0.375; 0.35; 0.07; 0.5; 0.9;

3. a. Two and sixteen hundreds
   b. Thirty-nine ten thousandths
   c. Thirty-three and one tenth

4. a. $2\frac{2}{3}$ b. $\frac{2}{7}$ c. $1\frac{3}{5}$

5. a. 15 b. 2.5 c. 0.07

6. a. 2500 c.c b. 40 drops

Worksheet #2

1. $1\frac{3}{4}$ oz.

2. $6\frac{7}{8}$ oz.

3. $4\frac{1}{2}$ pints

4. $7\frac{1}{2}$ oz.

5. Yes. $\frac{1}{20}$ is less than $\frac{1}{12}$

6. 12 doses

7. $28\frac{4}{7}$, or 28 bottles

8. 800 doses

Answer Sheet

Worksheet #3

1. 20 oz.
2. 60 drops
3. 5 teaspoons
4. 240 drops
5. 3 teaspoons
6. 1 $\frac{1}{2}$ cups (approx.)

Worksheet #4

1. 1000 gram
2. 1000 c.c
3. 0.067
4. 0.067
5. 15,000 drops

Worksheet #6

1. $\frac{3}{4}$
2. $\frac{1}{2}$ oz.
3. 160 oz., 168 oz.
5. 12,35,15
6. $\frac{11}{50}$, 110, 11, 165

Worksheet #7

1. $\frac{1}{4}$; 0.25 ; $\frac{25}{100}$; 25%
2. 150 gm; 350 gm
3. 21 pts.
4. 88%
5. 10 cupfuls, or 5 pts.
6. a. 80% ; 150%; 33 $\frac{1}{3}$ %
   b. $\frac{11}{50}$; $\frac{1}{3}$; 2

Worksheet #8

1. 9 gm.
2. 9 gm.
3. 2 qts.
4. 36 gm.
5. 9 qts.

Answer Sheet

Worksheet #10

1. 1 teaspoon
2. 3 teaspoons
3. 1½ teaspoons

1. 32 drops
2. 48 drops
3. 9.6, or approximately 10 drops

Introduction

"Business Experience and You"

Teacher Tools:

1. The low achiever is a pupil with sufficient ability to justify being in a regular classroom, and with an achievement in math below the 30th percentile.
2. Clinic-laboratory communications allows ease and rapport,
3. Positive expectancy-believe they can improve anddo,
4. Realization that emphasis on creativity, recognition, praise, reward are most valuable factors,
5. Consistency--logical sequence, concept building are importa
6. Use of varied kinds of diagnoses by receiving, processing, ordering, transmitting, through:

observation	recall
interest holders	relating concepts

7. Keep content revelant to known data while you increase their exposure.

Purpose of the Unit: to

1. help student more nearly master skills in arithmetic to be self-sustaining individual, develop fine, justifiable self-image,
2. break down student resistance to mathematics to be taught,
3. to prove competency in mathematics opens doors for pupils t pursue vocational training, move into higher range of class
4. stress recognition that education is a continuous process allowing change, progress in job situations after school career, etc.,
5. cover wide range of achievement allowing encouragement and food for learning for all facets of class, constant motivation through recognition of every small improvement,
6. encourage logical record keeping (workbooks) in orderly, progressive development proving individual growth in skills interest, desires,
7. strengthen skills in ability to follow directions

Introduction

"Business Experience and You"

Mathematics to be taught:

1. logical sequence
2. concept building
3. comparison of jobs, etc.
4. fundamental operations with decimals, common fractions, percents
5. competent form completion
6. record keeping
7. learning through observation--field trips, etc.
8. interest, reduction, accounts
9. signed numbers.
10. positive and negative numbers

Purposes kept before students:

1. Have some increased success each day.
2. See yourself as you can be. Develop fine self-image . . on justifiable level.
3. Use workbook as ruler by which you can enjoy making yourself grow.

Answers for BE1A and B.

1. $4.50
2. $12.50
3. J. $14.50, L $6.50 $21
4. $1.50; $3., $2.50, $11.25, $9.00, $4.50, $15.50
5. $1.13, no, + $20.42
6. Jonathan
7. $10
8. needs $27.71, 5½ weeks, $2.71

Teacher Suggestions #1C

"Business Experience and You"

1. You may change the names of the subjects to fit someone in the class if you feel it will make the problems more interesting to the students.
2. Stress the usefulness of the backs of the sheets for problem solving and that they should be numbered there although the answers are to be listed on the front of the page.
3. Labelling answers and parts of problems will help students keep up with what they are doing and to accumulate data for other sequential uses.
4. Stress the use and importance of charts for keeping up with data found whether it is required or not. A suggested form is given on BE1B (Optional).
5. Go through the problems and pick out any additional terms you feel they find difficult not listed in the Vocabulary.

Mathematics to be Taught

Logical sequence

figuring time, pay

changing per cents to decimals

changing decimals to per cents

addition of both per cents, and decimals

multiplication of both above

planning before using money

difference in month days

averaging

use of charts

balancing ones account

need for saving

increase

Materials

Newspaper clippings for comparing data
extra paper for additional worksheets if necessary
perhaps, samples of cloth may make the unit more realistic

Review facts from other units to be used here as:

4 functions with fractions (all three kinds)
Though we don't actually make a budget here, stress it's importance

Name Section Date

Worksheet #1

"Business Experience and You"

1. Lynn and Jonathan are junior high school friends in the low - allowance bracket:

   Lynn, baby sits at least twice a week at $.75 per hour for 3 hours each.

   How much money does she earn per week? ________

   (Do the work on the back of this sheet. If more paper is needed, you may add extra sheets of your own.)

2. Jonathan has a small job sweeping the neighborhood drugstore and delivering packages.

   He works after school from 7 to 9 p.m. at $1.25 per hour, 5 days.
   How much money does he make per week? ________

3. They both get $2 per week from their parents Jon______

   How much does each total per month? Lynn______

   What is their combined income? ______

4. They eat in the school cafeteria for 30 cents per platter with milk, 5 days each week.

   What does this equal per person? ________

   Together, how much do they spend for lunches?________

   They both enjoy the movies. They go once a week at $1.25 per person.

   Each pays his own way, but the sum equals________

   Per month, for an average $4\frac{1}{2}$ week month, it equals______

   Each of them puts a $1 in the bank weekly. This costs them a. per month b. per person
   a______
   b______

   Lynn buys socks and earrings monthly not to exceed $2.50.
   How much money does Lynn have at the end of the month____

Name Section Date

"Business Experience and You"

Lynn			Jonathan		
Reason	Paid in	Out	Reason	Paid in	Out
Total			Total		
Balance			Balance		

Name Section Date

5. In addition to page BE1A, Jonathan buys mushtache cream for his non-existant mushtache, a jar per month at $1.00.

He buys an average of 4 pairs of socks per month for a $1.00

He keeps his bicycle in good running order for travel to and from school, and for his deliveries. Jonathan buys a can of bike oil per month at $.95 a can.

He buys fruit for them to eat in the theater weekly at about 25 cents per trip.

What does fruit cost him per average month?________

Does Jonathan over spend?_________

If he does, how much? If he doesn't, what is left?______

6. Which one has the most money left at the end of the month?_____

7. While in school, someone ran over Jonathan's bike with a truck.

The bike cost him $62 last year, but is listed for $72 this year.

How much more does the bike cost this year?_____________

8. Jonathan only has $44.29 that he can use for this purpose.

How much more does he need?_________

He reasons, I don't want to borrow more money from my family. How can I get the rest of the money required? He went to his boss at the drugstore. He promised to let him have the needed money and take it out of his salary.

He will take $5 per week until paid.
How long will it take him to finish paying for his bike?_____

How much will the last payment be?_______

On his way home, he happily jumped over several fire hydrants. The last one left him more deeply in trouble than before. Jonathan ripped his pants so badly they can not be fixed. He just did not feel it was his day!

He looked in the papers for good ad's on pants. He compared them, and found most of them about the same price. Will you help him find more good ads on pants so he can get a really good buy for the least money they can be bought?

(Bring in ads from the daily papers from various stores.)

Teacher Suggestions #2

"Business Experience and You"

Mathematics to be taught

- per cent
- multiplication of mixed numbers
- concept of whole, part
- reasons for some reductions in prices
- good shopping habits
- values of buying in quantity when servicable
- addition of decimals, wholes, fractions
- changing fractions to common denominators
- changing fractions to decimals

- Sharing materials
- sharing clippings
- self-reliance
- group work
- filling in application only as extra credit and for experience in doing so.

Idea Concepts

If students need more work on any point in unit, other community stores could be tied into data.

The bike idea could be shopped for as were the pants.

Graphs could be used to clear up the concept of comparing, or whole, part, etc.

Some data could be kept for easy use of students on charts hung conveniently on the wall . . . as data on changing % to decimals, etc.

Refreshing and reinforcing the data from other days will help them develop retention spans greater than present ones. .we hope.

Stressing quiet place in which to study at home, regular handling of homework, checking problems to make sure their answers are correct, will improve their own self-image and status with class, teacher, etc.

Keeping all past work securely in notebook provided for that purpose, allows student to reuse data learned in other units when needed at home or at school.

In board and seat work, stress learning of basic equivalent fractions and their values all the way through life as change in money, etc. This practical concept might also build interest.

Answer Sheet

"Business Experience and You"

BE2D

1. $11.96
2. 65%, 35%, or 50%, 50%
3. $7.78, $4.18
4. $29.92, $7.48 , $4.86

BE2E

I.	II A	II B
1. 20.7	1. .42	1. 8.18
2. 21.56	2. 3.8	2. 1.4
3. 67.567	3. 2.3	3. 1.33
4. 121.19	4. 8.06	4. 8.8334
5. 9.287	5. .079	5. 8.25

III

1. $\frac{1}{4}$
2. $\frac{1}{2}$
3. $\frac{1}{3}$
4. $\frac{3}{4}$
5. $\frac{1}{5}$
6. $\frac{2}{3}$
7. $\frac{3}{8}$
8. $\frac{7}{50}$
9. $\frac{18}{25}$
10. $\frac{1}{50}$

BE3A

1. 6 weeks, $1.96
2. $7.50, 37.50
3. $6.25
4. 8 weeks
5. 4 hours 55 minutes
6. if we allow 25 minutes for unseen difficulties $25, $112.50
7. $15, $16.50
8. $10 more, $45 more
9. 30 %

Business Experience and You - Unit - Student Data Sheet

EST. 1940

Robert Hall

OPEN 9:30 'TIL 9:30

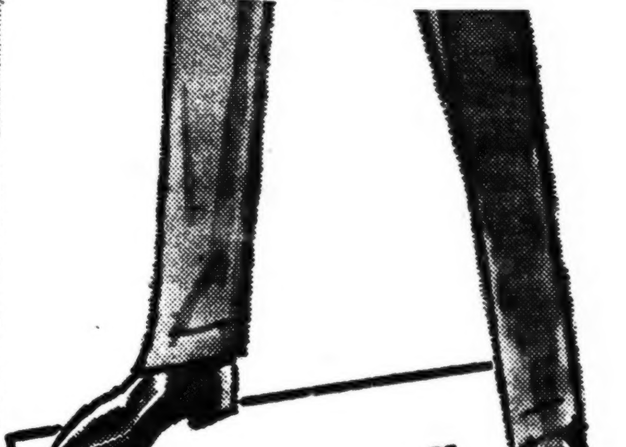
ONCE-A-SEASON

sale

NO-IRON TROPICAL DACRON®-AVRIL® SLACKS

2 for $11

Regularly 6.88 each



Best-sellers all season long at our regular low price...now reduced for even bigger value!

EST. 1940

Robert Hall

OPEN 9:30 'TIL 9:30

SORENTO® DACRON®-WORSTEDS

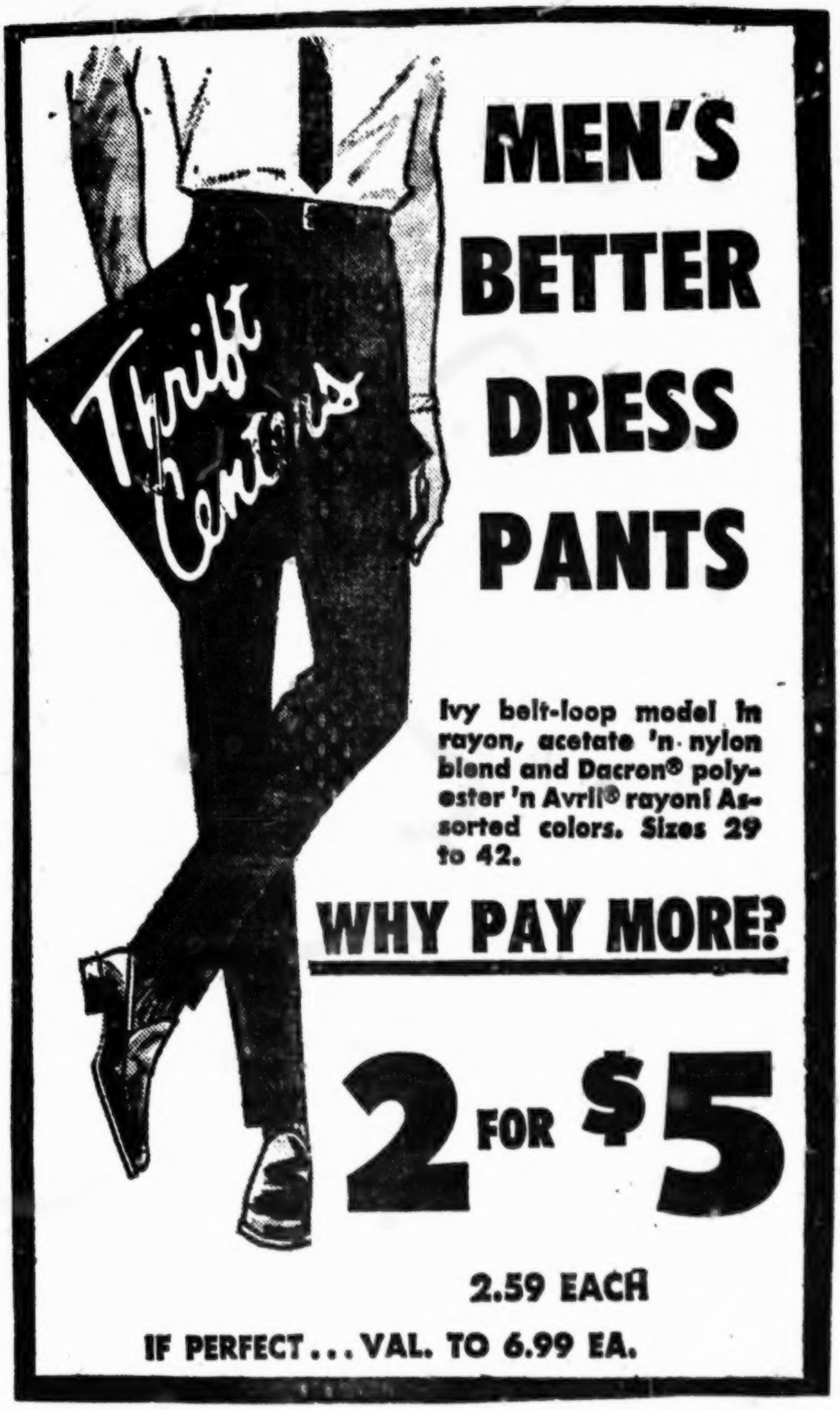
39.95

Only at Robert Hall

BEZA

NATIONALLY FAMOUS TROPIC-HALL® DACRON®-RAYONS

24.95



Thrift Centers

MEN'S BETTER DRESS PANTS

Ivy belt-loop model in rayon, acetate 'n nylon blend and Dacron® polyester 'n Avril® rayon! Assorted colors. Sizes 29 to 42.

WHY PAY MORE?

2 FOR $5

2.59 EACH

IF PERFECT... VAL. TO 6.99 EA.

Jonathan and Lynn looked in the daily papers to compare special sales on pants. They found at least three good stores where sta-press pants are on sale.

Lynn wanted to know how they could tell about quality by looking at the ads. Jonathan felt the looks of the ad and the style of the clothes might be a key, but then Lynn found data on one ad that told the make-up of the materials.

They decided to find the best pants with the largest amount of dacron in them!

ON SALE FRIDAY

WILMINGTON DRY GOODS CO

DOWNTOWN
418 MARKET ST. • OL 8-6551
OPEN MON., WED., & FRI EVES.
DAILY TO 5:30 — SUNDAYS 12 TO 7

MIDWAY
KIRKWOOD HWY. • WY 4-0926
OPEN 10:00 TO 10:00 DAILY
SUNDAY 12 NOON TO 7 P.M.

ON SALE FRIDAY

NE

BEF TH
HAD ER

★

SEE
THEM
IN OUR
DISPLAY
WINDOWS

★

JUST 1800! MEN'S STA-PRESS FAMOUS MAKER WALK

• 65% DACRON® and 35% COTTON
• 50% FORTREL® and 50% COTTON

★ Slight Irregulars That Defy Detection

Ivy, belt loop and continental styles. Regular and top pocket models. Solids, plaids, checks, stripes, fancy patterns. Tans, blues, greens, maize, gold, etc. Also 100% cottons in group. Plenty of sizes 28 to 36. Some sizes 38 to 42 . . . come early for these!

MEN'S WEAR—BOTH STORES

2.99 EACH

JUST 1800! MEN'S & YOUNG MEN'S STA-PRESS JEANS

• 50% FORTREL® and 50% COTTON

★ Slight Irregulars That Defy Detection

Jeans have center crease, finished bottoms. Never but never need ironing. Newest colors of: Wheat, willow green and black. 50% Fortrel® and 50% cotton. Waist sizes 29 to 38. Just 1800 to sell.

MEN'S DEPT.—BOTH STORES

2.99 EACH

PE2C

Name Section Date
Worksheet #2D

"Business Experience and You"

1. Jonathan found an Ad from Wilmington Dry Goods Company with a special for Friday men's stay-pressed for $2.99 each. They checked to see what they were at other stores. Then they found a small explanation that these at the Dry Goods were slight irregulars. They did not mind that, for in this case it made things easier for them.

   Jonathan decided he wanted at least 4 pairs of pants from this store.

   $2.99 each for 4 pairs of pants will be? ________

2. Lynn asked how much dacron will be in 4 pairs of pants? ______

   Jonathan decided that the total material in the group of pants will be 100% or all of the material in the pants. Therefore, if the following is true for one pair of pants, what will be true for 4 pairs of the same material:

1 pair of pants	4 pairs of pants
65 % dacron	______________
35% cotton	______________
or	or
50% fortrel	______________
50% cotton	______________

3. They had to laugh at the answers they found. Neither of them knew anything about fortrel, so they decided the dacron ones must be better. Just for fun, they planned to find:

   What the dacron cost will be for 4 pairs of pants ______
   The costs of cotton in the same pants ______

4. They checked the perfect pants of the same material at the same store and found that they cost $2\frac{1}{2}$ times as much. What would:

   4 pairs of the perfect pants cost? ______

   1 pair of the perfect pants cost? ______

   The cost of dacron in the better pants? ______

Name Section Date

Worksheet #2E

"Business Experience and You"

I

Addition

1. $1.6 + 2.3 + 7.8 + 9$
2. $4.56 + 9 + 7.2 + .8$
3. $4.867 + 43.8 + 7.9 + 11$
4. $29.6 + 83.\frac{1}{2} + 7.64 + .45$
5. $.83 + 2.9 + .7 + 4.857$

II

A

1. $.87 - .45$
2. $7.6 - 3.8$
3. $5.1 - 2.8$
4. $26.85 - 18.79$
5. $7.871 - 1.792$

1. $9 - .82$
2. $2.9 - 1\frac{1}{2}$
3. $2\frac{1}{4} - .92$
4. $9.075 - .2416$
5. $9 - .75$

III

Change these decimal fractions to common fractions:

1. $.25$
2. $.50$
3. $.33\frac{1}{2}$
4. $.75$
5. $.20$
6. $.66\frac{2}{3}$
7. $.37\frac{1}{2}$
8. $.14$
9. $.72$
10. $.02$

Name Section Date

Worksheet #3A

"Business Experience and You"

(Use back of sheet for work)

Jonathan decided they should go look at the pants and see if they could pay down on them. The Wilmington Dry Goods Store is a big one and they were surprised to see some of their classmates working there after school.

1. The pants were 4 pairs for $11.96. They paid $2.00 down on the pants and planned to pay $2.00 per week until all were paid for on the lay away plan.

   How long did it take for Jonathan to get his pants?________

   How much was the last payment? ________

2. They saw Dare working in the men's department. He said he makes $1.50 per hour.

   $1.50 per hour from 4 to 9 each school night, nightly equals? ________

   If he works 5 nights each week, what does he make per week? ________

3. Dare collected blanks for Jonathan and asked him to apply for a similar job. Jonathan recalled that he makes $1.25 per hour at the drugstore.

   If they work the same number of hours, how much more would Dare make? ________

4. Dare said that they can also work on Saturdays for one shift or from 12 to 7 on Sundays. The pay is the same.

   If Jonathan worked at Wilmington Dry Goods for Sundays only and used all of his money to pay for his bike and pants, how long would it take him to complete his bill? ________

5. He decided to keep his job at the drugstore and apply for Sunday work at the Dry Goods. He figured:

   School closes at 3. In half an hour I'm home. It takes 15 min. to get to work. It takes $\frac{1}{2}$ hour to eat. $\frac{1}{2}$ hour to bathe

   He must be in bed by 11 o'clock. He works from 7 to 9 p.m. How much time will he have to study? ________

Name Section Date

Worksheet #3B

"Business Experience and You"

6. With his regular job $2.50 per night earnings for five nights and on Sundays at the Dry Goods $1.50 per hour for 7 hours what would Jonathan make per week? ______________

   What would be his total salary for an average month? ______

7. Lynn decided that she would like to fill out an application for the Dry Goods Store. She wondered if girls make the same pay. Dare said that they do.

   Lynn's regular job $4.50 per week and Sundays at the Dry Goods 7 hours at $1.50 would be ______________ per week.

   Her pay per average month would be 4½ weeks ______________

8. How much more a week would Jonathan make? ________________

   How much more would that be for a month? ________________

9. They decided to apply and found there were some things they had to consider:

   Appearance-- 35% of getting the job

   Manner-- 35% of getting the job

   Intelligence, then equals what was left, and it equals ____?

   They found that if one does not look suitable, or act in an acceptable way, the owner may never get to know how much intelligence one has.

Teacher Suggestions #4A-F

"Business Experience and You"

The following blanks are inserted suggestions for using the blanks enclosed.

1. The student needs experience in filling out the blanks necessary for getting and keeping a job.

   Here too, could be suggested that those who need jobs could apply at the various stores the teacher knows are glad to have students after school.

   A few such stores are suggested below:

   Wilmington Dry Goods

   Grocery Stores

   Filling Stations

   Various 5 and 10 cent stores

   Neighborhood Drug Stores

   Car Wash Shops

   and add to the list from what ever suggestions you can get from your students. Assure them, you will be happy to recommend anyone who does well in your course.

   It would also be a fine place to tell them how important first impressions are and that it is important to look ones best at all times and act at ones best at all times.

2. In many cases the data asked for is using ones ability to record numbers correctly. . and therefore it is mathematics.

3. Stress neatness in filling out or in any data. Think over what is asked for first. Be sure of the answers before you begin to fill in the answer.

4. All data has to be easily read, and therefore clearly written.

5. If references are asked for, be sure to give the names of people you feel sure will give you the very best possible reference.

6. Be honest with them at all times and show them their decorum at school can help teachers and principals give them wonderful recommendations that may carry far more weight than any others they could possibly give.

7. Some cases the job will call for many different papers to be part of the job requirement.

   deduction claims
   time sheet
   commissions on over sales
   deductions on reduced goods
   loss
   supplies needed

Name　　　　　　　　　　　　　　　　Section　　　　　　　　　　　　　　　　Date

Business Experience and You - Unit - Student Worksheet - Day 4

THIS APPLICATION IS KEPT ACTIVE FOR ONLY 1 MONTH FROM DATE OF FILING.

APPLICATION FOR POSITION*

[redacted]

DATE__________

FULL NAME__________ AGE_____ DATE OF BIRTH__________

[illegible]

ADDRESS__________ TELEPHONE NO.__________ SOCIAL SECURITY NO.__________

POSITION APPLIED FOR__________ FULL TIME_____ PART TIME_____ SATURDAY ONLY_____

HOW LONG HAVE YOU LIVED AT THE ABOVE ADDRESS?__________ HOW LONG HAVE YOU LIVED IN THIS CITY?__________

HAVE YOU PROOF OF AGE?__________ IS ANYONE DEPENDENT ON YOU FOR SUPPORT?__________ WHO?__________

NO. CHILDREN_____ AGES__________

HAVE YOU EVER BEEN IN THE EMPLOY OF F. W. [redacted] CO.?__________

IF SO, WHEN AND WHERE?__________

HAVE YOU A RELATIVE NOW EMPLOYED BY F. W. [redacted] CO.?__________

IF SO, GIVE NAME AND RELATION__________

WHERE EMPLOYED?__________

IF MARRIED, HUSBAND'S OR WIFE'S NAME__________

WHERE EMPLOYED?__________

FATHER'S FULL NAME__________

MAKE AN "X" IN THE SQUARE IN FRONT OF THE WORDS THAT FIT YOUR CASE

☐ SINGLE
☐ MARRIED
☐ WIDOWED
☐ SEPARATED
☐ DIVORCED
☐ LIVING W/PARENTS
☐ HOUSEKEEPING
☐ LIVING W/RELATIVES
☐ BOARDING
☐ ROOMING

EDUCATION	NAME AND LOCATION OF SCHOOL	YEARS ATTENDED	COURSE PURSUED	DATE LEFT	DID YOU GRADUATE?
HIGH SCHOOL					
COLLEGE					

NAME TWO REFERENCES (NOT RELATIVES), STATING BUSINESS OR PROFESSION, WHO HAVE KNOWN YOU OVER ONE YEAR:

1.__________
NAME　　　　ADDRESS　　　　OCCUPATION

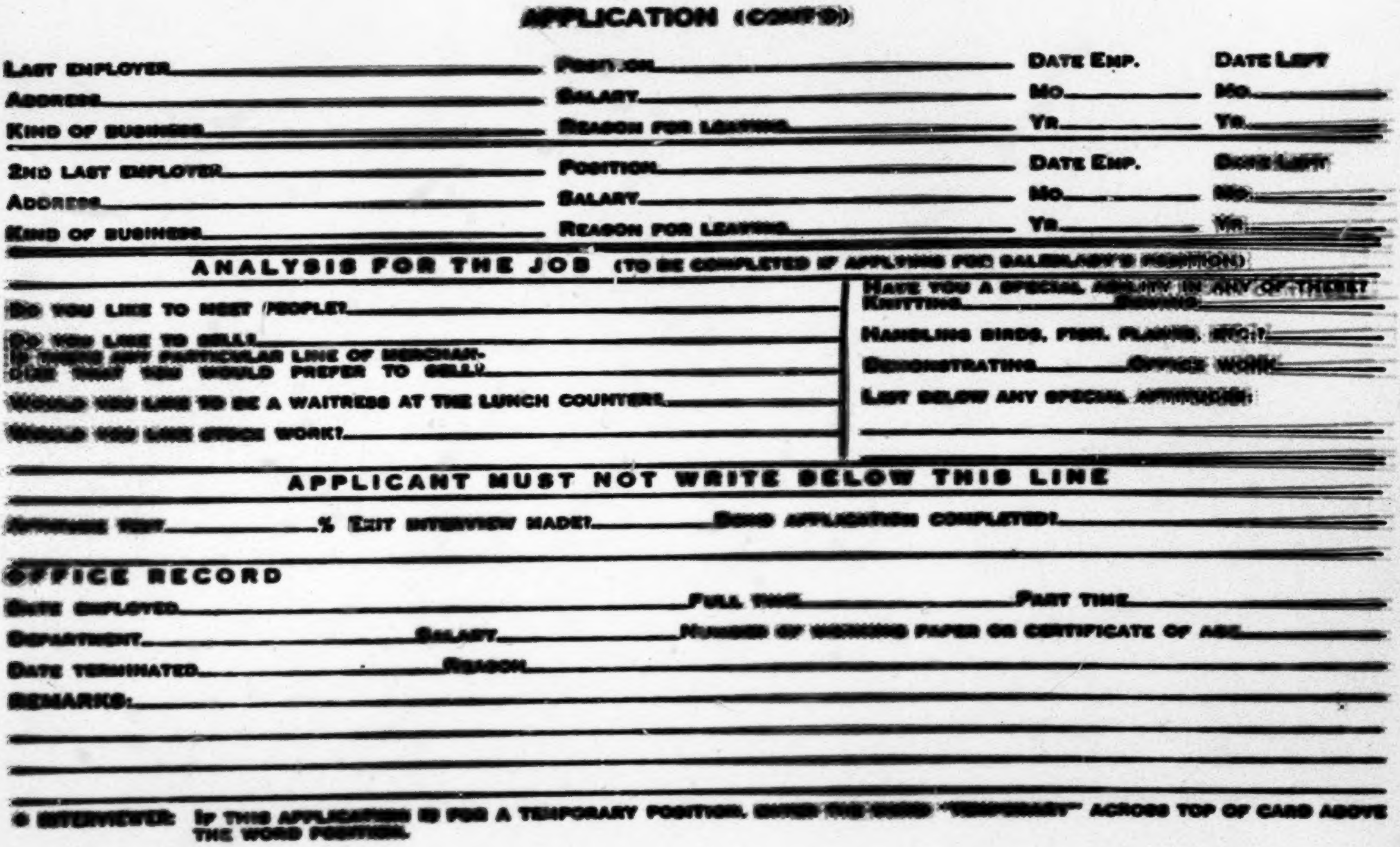
2.__________
NAME　　　　ADDRESS　　　　OCCUPATION

SIGNATURE OF APPLICANT__________ (PLEASE COMPLETE INFORMATION ON REVERSE SIDE)

[illegible]

Name ____ Section ____ Date ____

Business Experience and You - Unit - Student Worksheet - Day 4, continued



APPLICATION (CONT'D)

LAST EMPLOYER ____ POSITION ____ DATE EMP. DATE LEFT
ADDRESS ____ SALARY ____ MO. ____ MO. ____
KIND OF BUSINESS ____ REASON FOR LEAVING ____ YR. ____ YR. ____

2ND LAST EMPLOYER ____ POSITION ____ DATE EMP. DATE LEFT
ADDRESS ____ SALARY ____ MO. ____ MO. ____
KIND OF BUSINESS ____ REASON FOR LEAVING ____ YR. ____ YR. ____

ANALYSIS FOR THE JOB (TO BE COMPLETED IF APPLYING FOR SALESLADY'S POSITION)

DO YOU LIKE TO MEET PEOPLE? ____
DO YOU LIKE TO SELL? ____
IS THERE ANY PARTICULAR LINE OF MERCHANDISE THAT YOU WOULD PREFER TO SELL? ____
WOULD YOU LIKE TO BE A WAITRESS AT THE LUNCH COUNTERS? ____
WOULD YOU LIKE STOCK WORK? ____

HAVE YOU A SPECIAL ABILITY IN ANY OF THESE?
KNITTING ____ SEWING ____
HANDLING BIRDS, FISH, PLANTS, ETC.? ____
DEMONSTRATING ____ OFFICE WORK ____
LIST BELOW ANY SPECIAL APTITUDES:

APPLICANT MUST NOT WRITE BELOW THIS LINE

APTITUDE TEST ____ % EXIT INTERVIEW MADE? ____ BOND APPLICATION COMPLETED? ____

OFFICE RECORD
DATE EMPLOYED ____ FULL TIME ____ PART TIME ____
DEPARTMENT ____ SALARY ____ NUMBER OF WORKING PAPER OR CERTIFICATE OF AGE ____
DATE TERMINATED ____ REASON ____
REMARKS: ____

* INTERVIEWER: IF THIS APPLICATION IS FOR A TEMPORARY POSITION, ENTER THE WORD "TEMPORARY" ACROSS TOP OF CARD ABOVE THE WORD POSITION.

BE4TC

"Business Experience and You" Unit - Extra Optional

WILMINGTON TRUST COMPANY

APPLICATION FOR EMPLOYMENT

TE ____________

AME	LAST	FIRST	MIDDLE
ADDRESS		NUMBER OF YEARS	PHONE NO.
T PREVIOUS ADDRESS			NUMBER OF YEARS

[illegible]	SOCIAL SECURITY NO.	SEX	HEIGHT	WEIGHT

PHYSICAL DEFECTS	GLASSES ☐	OTHER [illegible]

SINGLE ☐	MARRIED ☐	DIVORCED ☐	SEPARATED ☐	WIDOWED ☐	NO. CHILDREN	NO. DEPENDENTS

RESIDENCE	WITH PARENTS ☐	RENT ☐	BOARD ☐	OWN HOME ☐	

FAMILY DATA	OCCUPATION	ADDRESS—IF DECEASED SO INDICATE
FATHER'S NAME		
MOTHER'S NAME		
HUSBAND OR WIFE		
DEPENDENTS		

PERSONAL REFERENCES—OTHER THAN RELATIVES OR EMPLOYERS

NAME	ADDRESS	YRS. ACQUAINTED	OCCUPATION
1			
2			
3			

(Over)

DO NOT WRITE BELOW THIS LINE

TEST SCORE		REMARKS
Score PT		Ap.
MT		Sp.
[illegible]		Pe.
[illegible]		Ex.
T		
all		
		BE4TD

APPLICATION APPROVED

EFFECTIVE

SALARY PER MO.

DEPARTMENT

EMPLOYEE NO.

EDUCATION AND EXPERIENCE

SCHOOL	NAME OF SCHOOL	DATE		SUBJECT OF SPECIALIZATION	GRADUATED YES - NO	DEGREE
		FROM	TO			
HIGH OR PREP						
COLLEGE						
BUSINESS						
OTHER						

EMPLOYER'S NAME & ADDRESS	TYPE OF WORK	DATES		SALARY	REASON FOR LEAVING
		FROM	TO		
LAST					
PREVIOUS					
PREVIOUS					

MILITARY SERVICE BRANCH	DATE		SPECIAL DUTIES OR TRAINING	PRESENT RESERVE STATUS
	FROM	TO		

SPECIAL QUALIFICATIONS

TYPING ☐ W. P. M. | SHORTHAND ☐ W. P. M. | ACCTNG. ☐ NO. OF SEMESTERS

BUSINESS MACHINES (Specify)

SALARY EXPECTED	WHAT LED YOU TO SEEK EMPLOYMENT HERE?

SIGNED ....

BE4TE

Name ______ Section ______ Date ______

Business Experience and You - Unit - Student Worksheet - Day 4

Form W-4 (Rev. Aug. [illegible])
U.S. Treasury Department
Internal Revenue Service

EMPLOYEE'S WITHHOLDING EXEMPTION CERTIFICATE

Print full name ______ Social Security No. ______

Print home address ______ City ______ State ______

EMPLOYEE: File this form with your employer. Otherwise, he must withhold U. S. income tax from your wages without exemption.

EMPLOYER: Keep this certificate with your records. If the employee is believed to have claimed too many exemptions, the District Director should be so advised.

HOW TO CLAIM YOUR WITHHOLDING EXEMPTIONS

1. If SINGLE, and you claim an exemption, write the figure "1" . . . . . . ______
2. If MARRIED, one exemption each for husband and wife if not claimed on another certificate.
   - (a) If you claim both of these exemptions, write the figure "2"
   - (b) If you claim one of these exemptions, write the figure "1"
   - (c) If you claim neither of these exemptions, write "0" . . . . . . ______
3. Exemptions for age and blindness (applicable only to you and your wife but not to dependents):
   - (a) If you or your wife will be 65 years of age or older at the end of the year, and you claim this exemption, write the figure "1"; if both will be 65 or older, and you claim both of these exemptions, write the figure "2" . . . . . . ______
   - (b) If you or your wife are blind, and you claim this exemption, write the figure "1"; if both are blind, and you claim both of these exemptions, write the figure "2" . . . . . . ______
4. If you claim exemptions for one or more dependents, write the number of such exemptions. (Do not claim exemption for a dependent unless you are qualified under instruction 3 on other side.) . . . . . . ______
5. Add the number of exemptions which you have claimed above and write the total . . . . . . ______

I CERTIFY that the number of withholding exemptions claimed on this certificate does not exceed the number to which I am entitled.

(Date) ______, 19____ [illegible] (Signed) ______

Form W-4
State Tax Department

STATE OF DELAWARE
EMPLOYEE'S WITHHOLDING EXEMPTION CERTIFICATE
(Collection of Delaware Income Tax at Source on Wages)

Print full name ______ Social Security No. ______

Print home address ______

HOW TO CLAIM YOUR WITHHOLDING EXEMPTIONS

1. Every taxpayer is entitled to one exemption. If you claim it, write the figure "1" ______
2. If you are married, one exemption is allowable for wife or husband if spouse does not claim an exemption on a withholding exemption certificate. If you claim the exemption write the figure "1" ______
3. One exemption is allowable for each dependent whose gross income for the calendar year is less than $600.00. ______
4. Additional exemptions for age and blindness:
   - (a) If you or your wife will be 65 years of age or older at the end of the year and you claim the exemption write the figure "1"; if both will be 65 or older at the end of the year and you claim both of the exemptions write the figure "2" ______
   - (b) If you or your wife are blind and you claim this exemption have the figure "1" written; if both are blind and you claim both of these exemptions, have the figure "2" written ______
5. Add the number of exemptions which you have claimed above and write the total ______

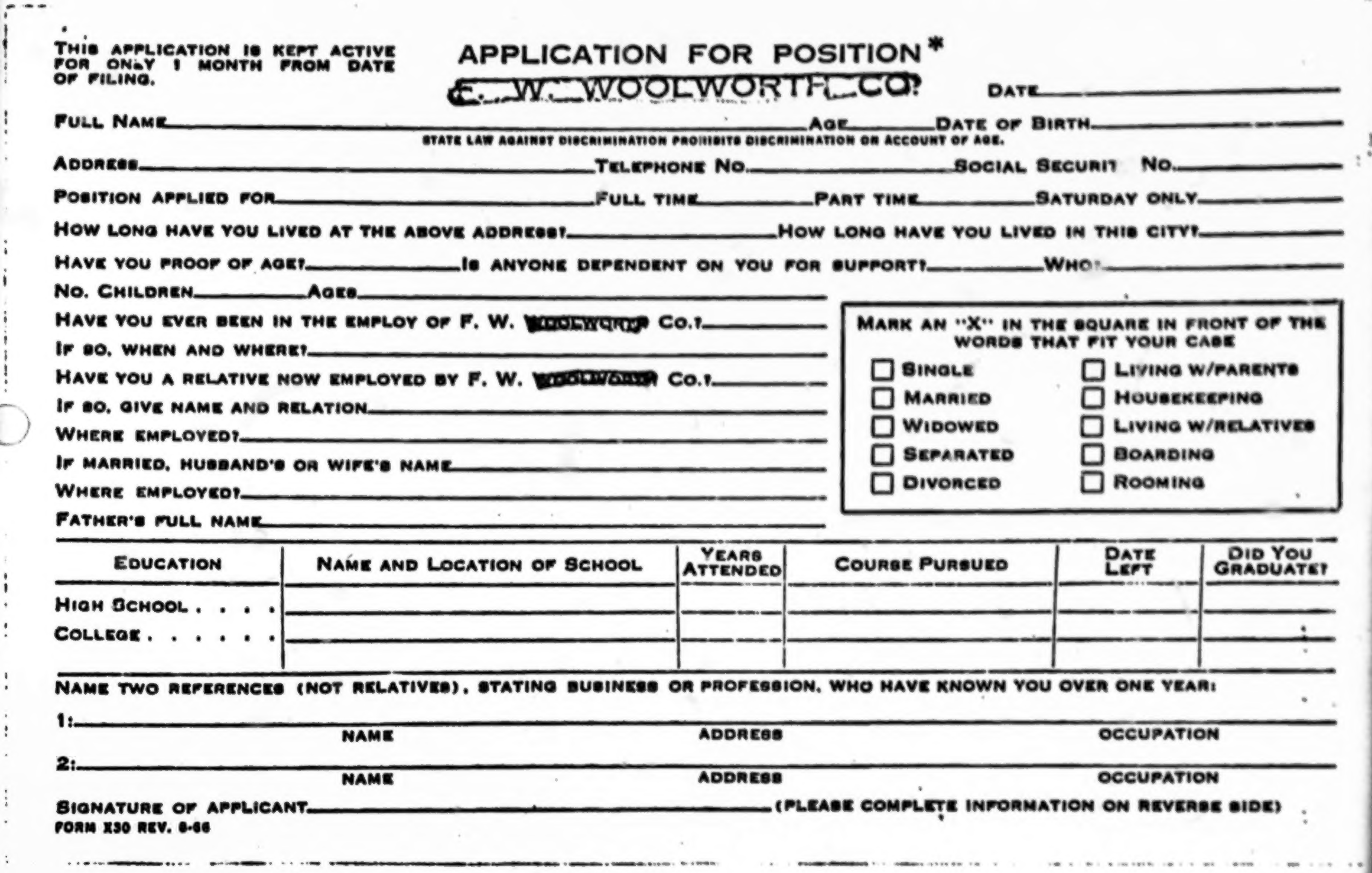
I CERTIFY that the number of withholding exemptions claimed on this certificate does not exceed the number to which I am entitled.

(Date) ______, 19____ (Signed) ______

BE4TF

Name Section Date

Business Experience and You - Unit - Student Worksheet - Day 4



THIS APPLICATION IS KEPT ACTIVE FOR ONLY 1 MONTH FROM DATE OF FILING.

APPLICATION FOR POSITION*

F. W. WOOLWORTH CO.

DATE ____________

FULL NAME ____________ AGE ______ DATE OF BIRTH ____________

STATE LAW AGAINST DISCRIMINATION PROHIBITS DISCRIMINATION ON ACCOUNT OF AGE.

ADDRESS ____________ TELEPHONE NO. ____________ SOCIAL SECURITY NO. ____________

POSITION APPLIED FOR ____________ FULL TIME ______ PART TIME ______ SATURDAY ONLY ______

HOW LONG HAVE YOU LIVED AT THE ABOVE ADDRESS? ____________ HOW LONG HAVE YOU LIVED IN THIS CITY? ____________

HAVE YOU PROOF OF AGE? ______ IS ANYONE DEPENDENT ON YOU FOR SUPPORT? ______ WHO? ______

NO. CHILDREN ______ AGES ____________

HAVE YOU EVER BEEN IN THE EMPLOY OF F. W. [redacted] CO.? ____________

IF SO, WHEN AND WHERE? ____________

HAVE YOU A RELATIVE NOW EMPLOYED BY F. W. [redacted] CO.? ____________

IF SO, GIVE NAME AND RELATION ____________

WHERE EMPLOYED? ____________

IF MARRIED, HUSBAND'S OR WIFE'S NAME ____________

WHERE EMPLOYED? ____________

FATHER'S FULL NAME ____________

MARK AN "X" IN THE SQUARE IN FRONT OF THE WORDS THAT FIT YOUR CASE

- ☐ SINGLE
- ☐ MARRIED
- ☐ WIDOWED
- ☐ SEPARATED
- ☐ DIVORCED
- ☐ LIVING W/PARENTS
- ☐ HOUSEKEEPING
- ☐ LIVING W/RELATIVES
- ☐ BOARDING
- ☐ ROOMING

EDUCATION	NAME AND LOCATION OF SCHOOL	YEARS ATTENDED	COURSE PURSUED	DATE LEFT	DID YOU GRADUATE?
HIGH SCHOOL					
COLLEGE					

NAME TWO REFERENCES (NOT RELATIVES), STATING BUSINESS OR PROFESSION, WHO HAVE KNOWN YOU OVER ONE YEAR:

1: ____________ NAME ____________ ADDRESS ____________ OCCUPATION

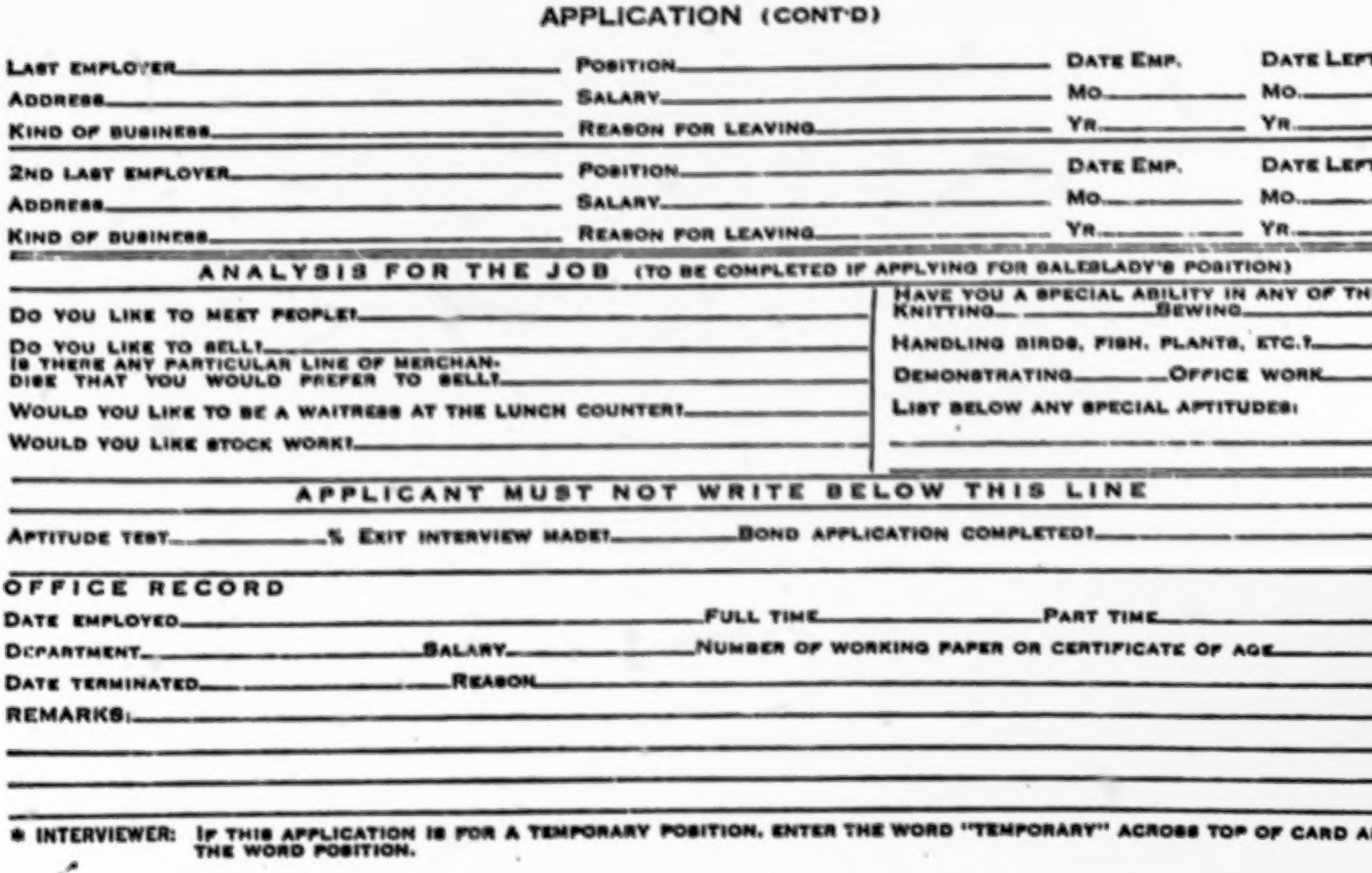
2: ____________ NAME ____________ ADDRESS ____________ OCCUPATION

SIGNATURE OF APPLICANT ____________ (PLEASE COMPLETE INFORMATION ON REVERSE SIDE)

FORM X30 REV. 6-66

Name ____ Section ____ Date ____

Business Experience and You - Unit - Student Worksheet - Day 4, continued



APPLICATION (CONT'D)

LAST EMPLOYER ____ POSITION ____ DATE EMP. DATE LEF
ADDRESS ____ SALARY ____ MO. ____ MO. ____
KIND OF BUSINESS ____ REASON FOR LEAVING ____ YR. ____ YR. ____

2ND LAST EMPLOYER ____ POSITION ____ DATE EMP. DATE LEF
ADDRESS ____ SALARY ____ MO. ____ MO. ____
KIND OF BUSINESS ____ REASON FOR LEAVING ____ YR. ____ YR. ____

ANALYSIS FOR THE JOB (TO BE COMPLETED IF APPLYING FOR SALESLADY'S POSITION)

DO YOU LIKE TO MEET PEOPLE? ____
DO YOU LIKE TO SELL? ____
IS THERE ANY PARTICULAR LINE OF MERCHANDISE THAT YOU WOULD PREFER TO SELL? ____
WOULD YOU LIKE TO BE A WAITRESS AT THE LUNCH COUNTER? ____
WOULD YOU LIKE STOCK WORK? ____

HAVE YOU A SPECIAL ABILITY IN ANY OF TH
KNITTING ____ SEWING ____
HANDLING BIRDS, FISH, PLANTS, ETC.? ____
DEMONSTRATING ____ OFFICE WORK ____
LIST BELOW ANY SPECIAL APTITUDES:

APPLICANT MUST NOT WRITE BELOW THIS LINE

APTITUDE TEST ____ % EXIT INTERVIEW MADE? ____ BOND APPLICATION COMPLETED? ____

OFFICE RECORD

DATE EMPLOYED ____ FULL TIME ____ PART TIME ____
DEPARTMENT ____ SALARY ____ NUMBER OF WORKING PAPER OR CERTIFICATE OF AGE ____
DATE TERMINATED ____ REASON ____
REMARKS: ____

* INTERVIEWER: IF THIS APPLICATION IS FOR A TEMPORARY POSITION, ENTER THE WORD "TEMPORARY" ACROSS TOP OF CARD A THE WORD POSITION.

" Business Experience and You" Unit - Extra Optional

WILMINGTON TRUST COMPANY

APPLICATION FOR EMPLOYMENT

DATE ____________

NAME	LAST	FIRST	MIDDLE
ADDRESS		NUMBER OF YEARS	PHONE NO.
LAST PREVIOUS ADDRESS			NUMBER OF YEARS

(Leave Blank)	SOCIAL SECURITY NO.	SEX	HEIGHT	WEIGHT

PHYSICAL DEFECTS	GLASSES ☐	OTHER (EXPLAIN)

SINGLE ☐	MARRIED ☐	DIVORCED ☐	SEPARATED ☐	WIDOWED ☐	NO. CHILDREN	NO. DEPENDENTS

RESIDENCE	WITH PARENTS ☐	RENT ☐	BOARD ☐	OWN HOME ☐	

FAMILY DATA	OCCUPATION	ADDRESS—IF DECEASED SO INDICATE
FATHER'S NAME		
MOTHER'S NAME		
HUSBAND OR WIFE		
DEPENDENTS		

PERSONAL REFERENCES—OTHER THAN RELATIVES OR EMPLOYERS

NAME	ADDRESS	YRS. ACQUAINTED	OCCUPATION
1			
2			
3			

(Over)

DO NOT WRITE BELOW THIS LINE

TEST SCORE		REMARKS	APPLICATION APPROVED
PT	Score	Ap.	EFFECTIVE
NF		Sp.	SALARY PER MO.
NS		Po.	DEPARTMENT
NP		Ex.	EMPLOYEE NO.
T			
SH			

Form 0014

EDUCATION AND EXPERIENCE

SCHOOL	NAME OF SCHOOL	DATE FROM	DATE TO	SUBJECT OF SPECIALIZATION	GRADUATED YES · NO	DEGREE
HIGH OR PREP						
COLLEGE						
BUSINESS						
OTHER						

EMPLOYER'S NAME & ADDRESS	TYPE OF WORK	DATES FROM	DATES TO	SALARY	REASON FOR LEAVING
LAST					
PREVIOUS					
PREVIOUS					

MILITARY SERVICE BRANCH	DATE FROM	DATE TO	SPECIAL DUTIES OR TRAINING	PRESENT RESERVE STATUS

SPECIAL QUALIFICATIONS

TYPING ☐ W. P. M.

SHORTHAND ☐ W. P. M.

ACCTNG. ☐ NO. OF SEMESTERS

BUSINESS MACHINES (Specify)

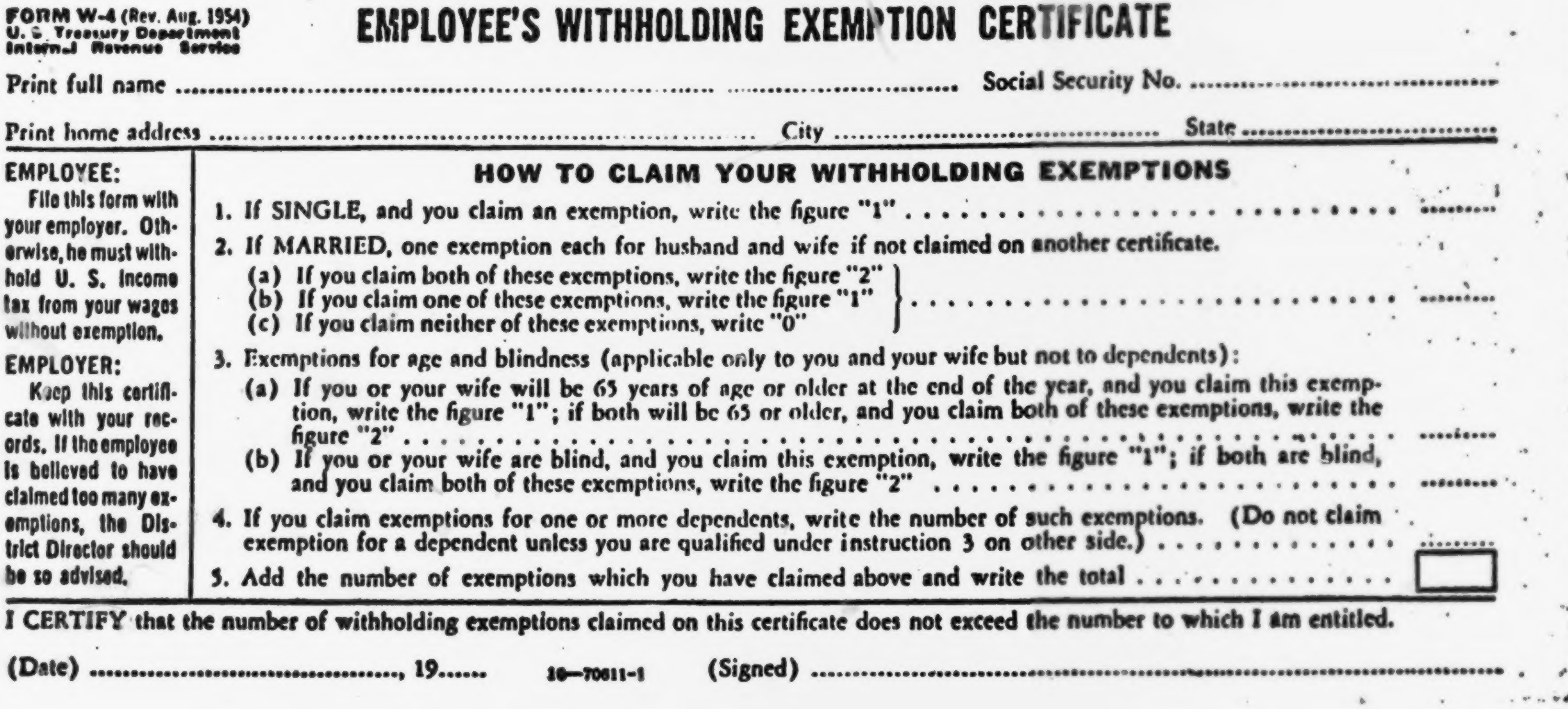
SALARY EXPECTED	WHAT LED YOU TO SEEK EMPLOYMENT HERE?

SIGNED ....

B-E 4 T E

Name Section Date

Business Experience and You - Unit - Student Worksheet - Day 4



FORM W-4 (Rev. Aug. 1954)
U. S. Treasury Department
Internal Revenue Service

EMPLOYEE'S WITHHOLDING EXEMPTION CERTIFICATE

Print full name .... Social Security No. ....

Print home address .... City .... State ....

EMPLOYEE: File this form with your employer. Otherwise, he must withhold U. S. income tax from your wages without exemption.

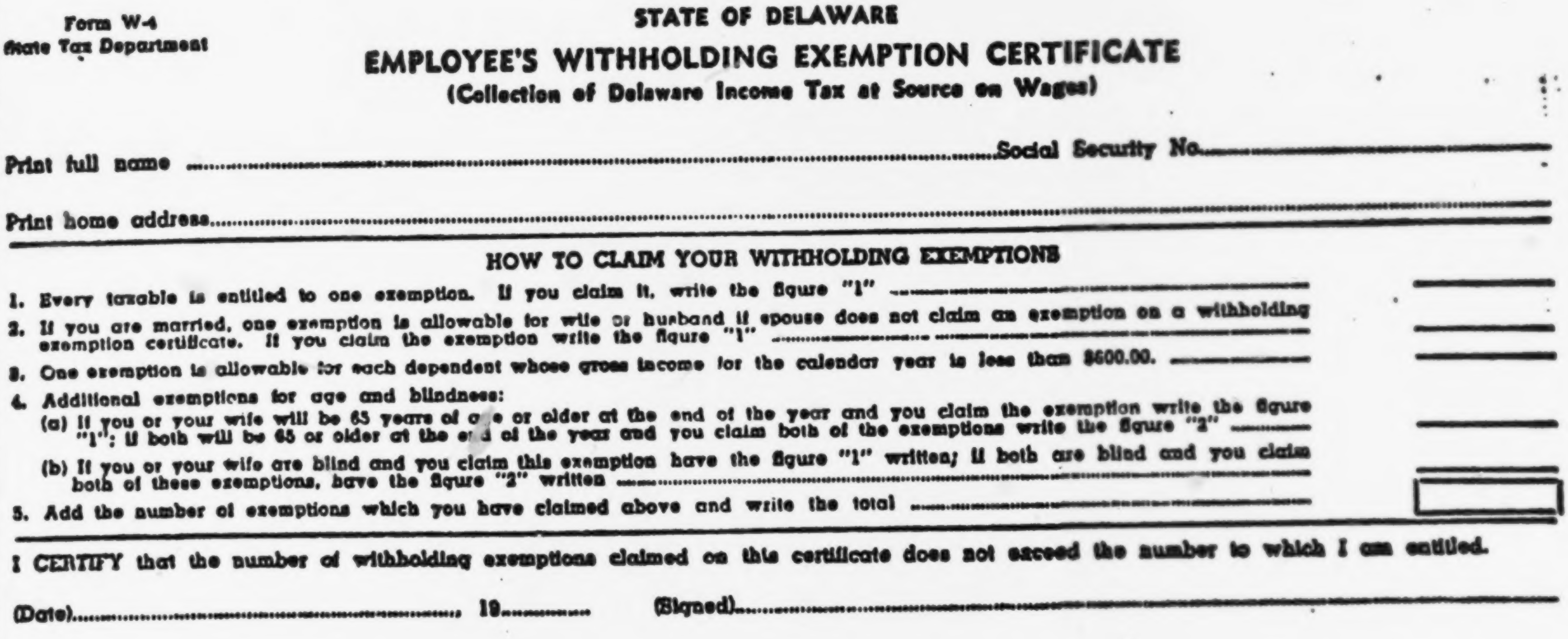
EMPLOYER: Keep this certificate with your records. If the employee is believed to have claimed too many exemptions, the District Director should be so advised.

HOW TO CLAIM YOUR WITHHOLDING EXEMPTIONS

1. If SINGLE, and you claim an exemption, write the figure "1" . . . .
2. If MARRIED, one exemption each for husband and wife if not claimed on another certificate.
   (a) If you claim both of these exemptions, write the figure "2"
   (b) If you claim one of these exemptions, write the figure "1" . . . .
   (c) If you claim neither of these exemptions, write "0"
3. Exemptions for age and blindness (applicable only to you and your wife but not to dependents):
   (a) If you or your wife will be 65 years of age or older at the end of the year, and you claim this exemption, write the figure "1"; if both will be 65 or older, and you claim both of these exemptions, write the figure "2" . . . .
   (b) If you or your wife are blind, and you claim this exemption, write the figure "1"; if both are blind, and you claim both of these exemptions, write the figure "2" . . . .
4. If you claim exemptions for one or more dependents, write the number of such exemptions. (Do not claim exemption for a dependent unless you are qualified under instruction 3 on other side.) . . . .
5. Add the number of exemptions which you have claimed above and write the total . . . . . . ☐

I CERTIFY that the number of withholding exemptions claimed on this certificate does not exceed the number to which I am entitled.

(Date) ...., 19...... 16—70611-1 (Signed) ....



Form W-4
State Tax Department

STATE OF DELAWARE

EMPLOYEE'S WITHHOLDING EXEMPTION CERTIFICATE

(Collection of Delaware Income Tax at Source on Wages)

Print full name ....Social Security No.____________

Print home address..

HOW TO CLAIM YOUR WITHHOLDING EXEMPTIONS

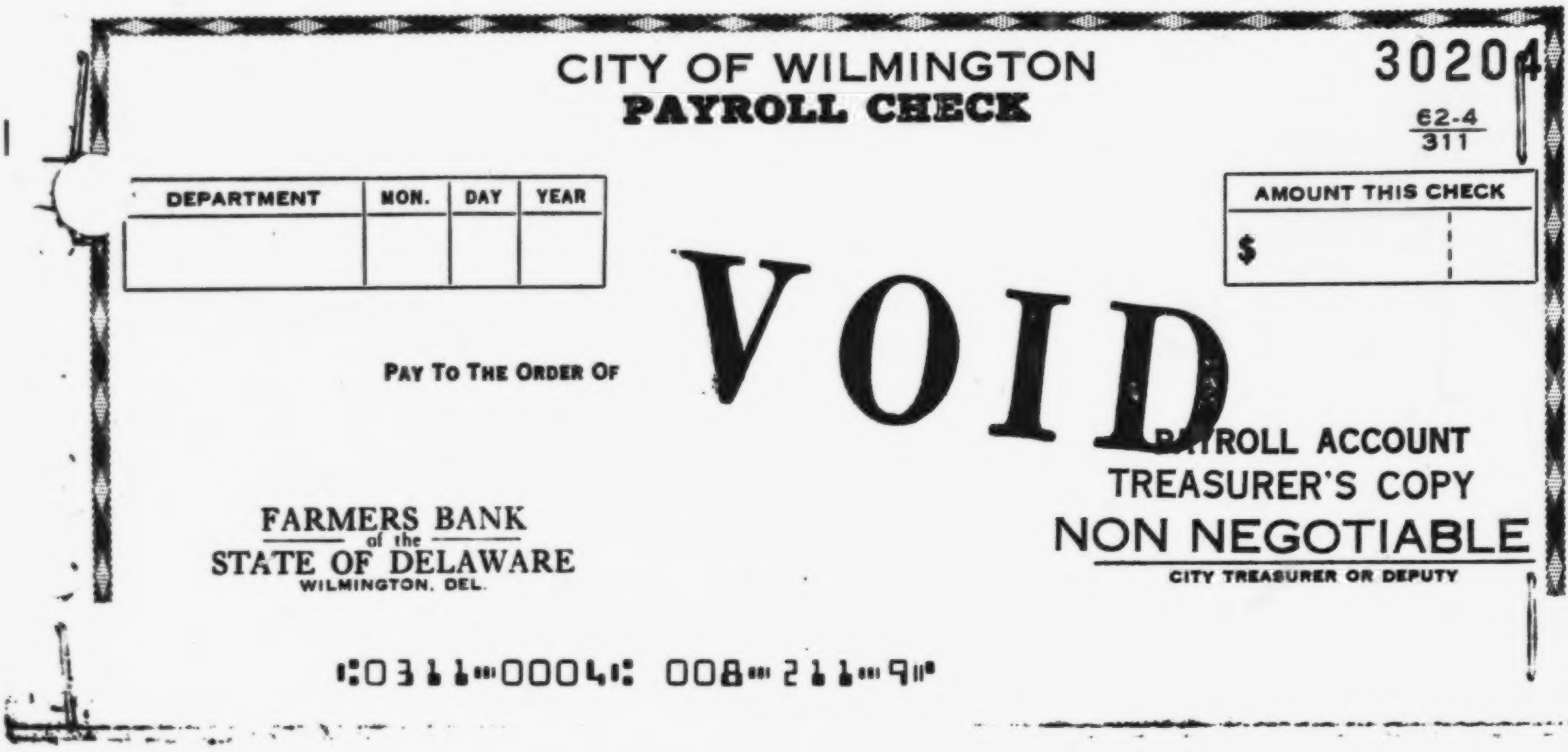
1. Every taxable is entitled to one exemption. If you claim it, write the figure "1" ________ ________
2. If you are married, one exemption is allowable for wife or husband if spouse does not claim an exemption on a withholding exemption certificate. If you claim the exemption write the figure "1" ________ ________
3. One exemption is allowable for each dependent whose gross income for the calendar year is less than $600.00. ________ ________
4. Additional exemptions for age and blindness:
   (a) If you or your wife will be 65 years of age or older at the end of the year and you claim the exemption write the figure "1"; if both will be 65 or older at the end of the year and you claim both of the exemptions write the figure "2" ________ ________
   (b) If you or your wife are blind and you claim this exemption have the figure "1" written; if both are blind and you claim both of these exemptions, have the figure "2" written ________ ________
5. Add the number of exemptions which you have claimed above and write the total ________ ☐

I CERTIFY that the number of withholding exemptions claimed on this certificate does not exceed the number to which I am entitled.

(Date)... 19............ (Signed)...

Name Section Date

"Business Experience and You" Unit- Student Worksheet - Day 4



CITY OF WILMINGTON
PAYROLL CHECK

30204

62-4
311

DEPARTMENT	MON.	DAY	YEAR

AMOUNT THIS CHECK
$

PAY TO THE ORDER OF

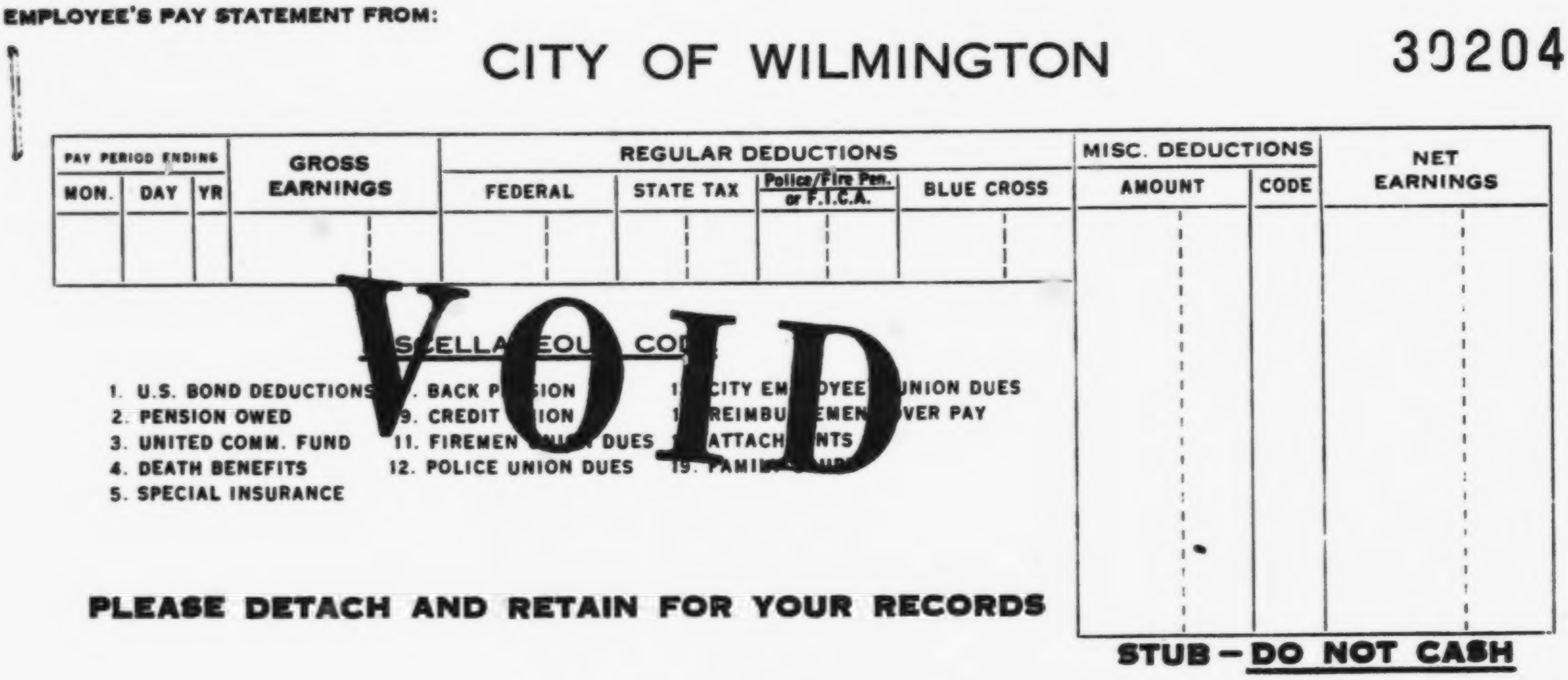
VOID

PAYROLL ACCOUNT
TREASURER'S COPY
NON NEGOTIABLE

CITY TREASURER OR DEPUTY

FARMERS BANK
of the
STATE OF DELAWARE
WILMINGTON, DEL.

⑆0311⑉0004⑆ 008⑉211⑉9⑈



EMPLOYEE'S PAY STATEMENT FROM:

CITY OF WILMINGTON

30204

PAY PERIOD ENDING			GROSS EARNINGS	REGULAR DEDUCTIONS				MISC. DEDUCTIONS		NET EARNINGS
MON.	DAY	YR		FEDERAL	STATE TAX	Police/Fire Pen. or F.I.C.A.	BLUE CROSS	AMOUNT	CODE	

VOID

SCELLA EOU COD

1. U.S. BOND DEDUCTIONS
2. PENSION OWED
3. UNITED COMM. FUND
4. DEATH BENEFITS
5. SPECIAL INSURANCE

. BACK P SION
9. CREDIT ION
11. FIREMEN DUES
12. POLICE UNION DUES

1 CITY EM OYEE UNION DUES
1 REIMBU EMEN VER PAY
ATTACH NTS
19. FAMI

PLEASE DETACH AND RETAIN FOR YOUR RECORDS

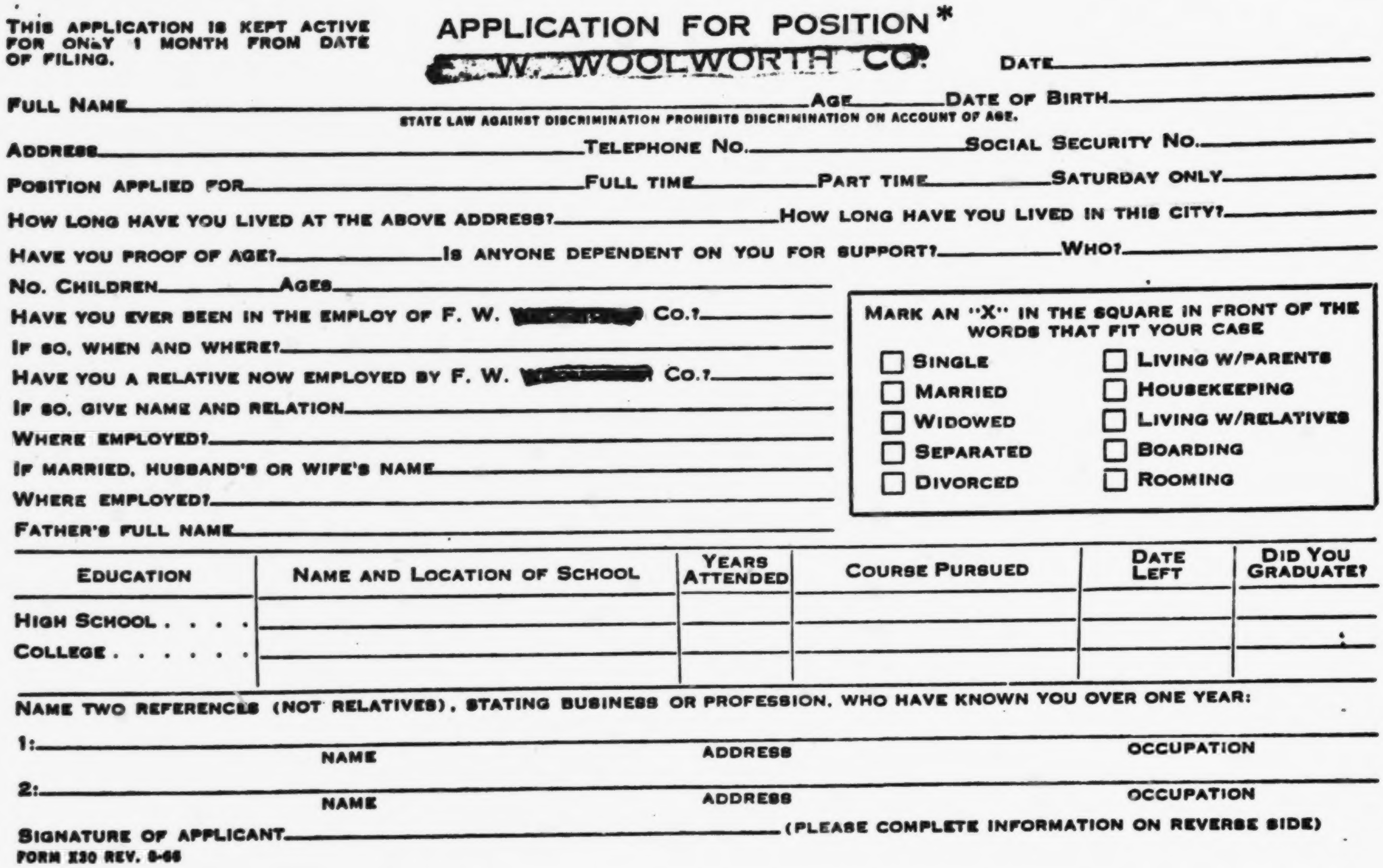
STUB — DO NOT CASH

ALLIED EGRY BUSINESS SYSTEMS

BE4A

Name Section Date

Business Experience and You - Unit - Student Worksheet - Day 4



THIS APPLICATION IS KEPT ACTIVE FOR ONLY 1 MONTH FROM DATE OF FILING.

APPLICATION FOR POSITION*

[redacted] W. WOOLWORTH CO.

DATE

FULL NAME AGE DATE OF BIRTH

STATE LAW AGAINST DISCRIMINATION PROHIBITS DISCRIMINATION ON ACCOUNT OF AGE.

ADDRESS TELEPHONE NO. SOCIAL SECURITY NO.

POSITION APPLIED FOR FULL TIME PART TIME SATURDAY ONLY

HOW LONG HAVE YOU LIVED AT THE ABOVE ADDRESS? HOW LONG HAVE YOU LIVED IN THIS CITY?

HAVE YOU PROOF OF AGE? IS ANYONE DEPENDENT ON YOU FOR SUPPORT? WHO?

NO. CHILDREN AGES

HAVE YOU EVER BEEN IN THE EMPLOY OF F. W. [redacted] CO.?

IF SO, WHEN AND WHERE?

HAVE YOU A RELATIVE NOW EMPLOYED BY F. W. [redacted] CO.?

IF SO, GIVE NAME AND RELATION

WHERE EMPLOYED?

IF MARRIED, HUSBAND'S OR WIFE'S NAME

WHERE EMPLOYED?

FATHER'S FULL NAME

MARK AN "X" IN THE SQUARE IN FRONT OF THE WORDS THAT FIT YOUR CASE

- ☐ SINGLE
- ☐ MARRIED
- ☐ WIDOWED
- ☐ SEPARATED
- ☐ DIVORCED
- ☐ LIVING W/PARENTS
- ☐ HOUSEKEEPING
- ☐ LIVING W/RELATIVES
- ☐ BOARDING
- ☐ ROOMING

EDUCATION	NAME AND LOCATION OF SCHOOL	YEARS ATTENDED	COURSE PURSUED	DATE LEFT	DID YOU GRADUATE?
HIGH SCHOOL					
COLLEGE					

NAME TWO REFERENCES (NOT RELATIVES), STATING BUSINESS OR PROFESSION, WHO HAVE KNOWN YOU OVER ONE YEAR:

1: NAME ADDRESS OCCUPATION

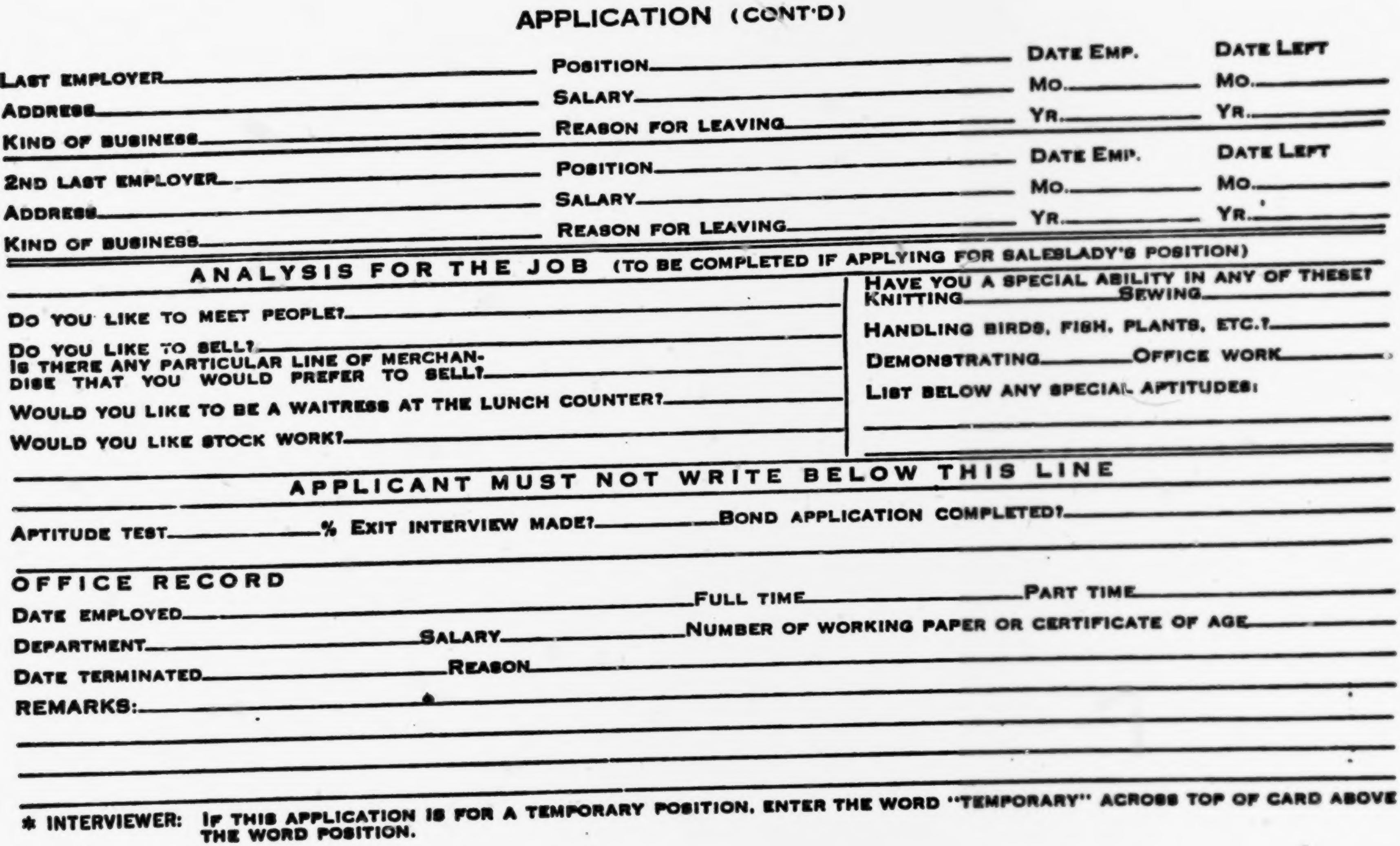
2: NAME ADDRESS OCCUPATION

SIGNATURE OF APPLICANT (PLEASE COMPLETE INFORMATION ON REVERSE SIDE)

FORM X30 REV. 8-66

Name Section Date

Business Experience and You - Unit - Student Worksheet - Day 4, continued



APPLICATION (CONT'D)

LAST EMPLOYER ____ POSITION ____ DATE EMP. Mo. ____ Yr. ____ DATE LEFT Mo. ____ Yr. ____
ADDRESS ____ SALARY ____
KIND OF BUSINESS ____ REASON FOR LEAVING ____

2ND LAST EMPLOYER ____ POSITION ____ DATE EMP. Mo. ____ Yr. ____ DATE LEFT Mo. ____ Yr. ____
ADDRESS ____ SALARY ____
KIND OF BUSINESS ____ REASON FOR LEAVING ____

ANALYSIS FOR THE JOB (TO BE COMPLETED IF APPLYING FOR SALESLADY'S POSITION)

DO YOU LIKE TO MEET PEOPLE? ____
DO YOU LIKE TO SELL? ____
IS THERE ANY PARTICULAR LINE OF MERCHANDISE THAT YOU WOULD PREFER TO SELL? ____
WOULD YOU LIKE TO BE A WAITRESS AT THE LUNCH COUNTER? ____
WOULD YOU LIKE STOCK WORK? ____

HAVE YOU A SPECIAL ABILITY IN ANY OF THESE?
KNITTING ____ SEWING ____
HANDLING BIRDS, FISH, PLANTS, ETC.? ____
DEMONSTRATING ____ OFFICE WORK ____
LIST BELOW ANY SPECIAL APTITUDES:

APPLICANT MUST NOT WRITE BELOW THIS LINE

APTITUDE TEST ____ % EXIT INTERVIEW MADE? ____ BOND APPLICATION COMPLETED? ____

OFFICE RECORD

DATE EMPLOYED ____ FULL TIME ____ PART TIME ____
DEPARTMENT ____ SALARY ____ NUMBER OF WORKING PAPER OR CERTIFICATE OF AGE ____
DATE TERMINATED ____ REASON ____
REMARKS: ____

* INTERVIEWER: IF THIS APPLICATION IS FOR A TEMPORARY POSITION, ENTER THE WORD "TEMPORARY" ACROSS TOP OF CARD ABOVE THE WORD POSITION.

" Business Experience and You" Unit - Extra Optional

WILMINGTON TRUST COMPANY

APPLICATION FOR EMPLOYMENT

DATE ________________

NAME	LAST	FIRST	MIDDLE

ADDRESS		NUMBER OF YEARS	PHONE NO.
LAST PREVIOUS ADDRESS			NUMBER OF YEARS

(Leave Blank)	SOCIAL SECURITY NO.	SEX	HEIGHT	WEIGHT

PHYSICAL DEFECTS	GLASSES ☐	OTHER (EXPLAIN)

SINGLE ☐	MARRIED ☐	DIVORCED ☐	SEPARATED ☐	WIDOWED ☐	NO. CHILDREN	NO. DEPENDENTS

RESIDENCE	WITH PARENTS ☐	RENT ☐	BOARD ☐	OWN HOME ☐	

FAMILY DATA	OCCUPATION	ADDRESS—IF DECEASED SO INDICATE
FATHER'S NAME		
MOTHER'S NAME		
HUSBAND OR WIFE		
DEPENDENTS		

PERSONAL REFERENCES—OTHER THAN RELATIVES OR EMPLOYERS

NAME	ADDRESS	YRS. ACQUAINTED	OCCUPATION
1			
2			
3			

(Over)

DO NOT WRITE BELOW THIS LINE

TEST SCORE		REMARKS	APPLICATION APPROVED
PT	Score	Ap.	EFFECTIVE
NF		Sp.	SALARY PER MO.
NS		Po.	DEPARTMENT
NP		Ex.	EMPLOYEE NO.
T			
SH			

Form 0014

BE 4D

EDUCATION AND EXPERIENCE

SCHOOL	NAME OF SCHOOL	DATE		SUBJECT OF SPECIALIZATION	GRADUATED YES - NO	DEGREE
		FROM	TO			
HIGH OR PREP						
COLLEGE						
BUSINESS						
OTHER						

EMPLOYER'S NAME & ADDRESS	TYPE OF WORK	DATES		SALARY	REASON FOR LEAVING
		FROM	TO		
LAST					
PREVIOUS					
PREVIOUS					

MILITARY SERVICE BRANCH	DATE		SPECIAL DUTIES OR TRAINING	PRESENT RESERVE STATUS
	FROM	TO		

SPECIAL QUALIFICATIONS

TYPING ☐ W. P. M. | SHORTHAND ☐ W. P. M. | ACCTNG. ☐ NO. OF SEMESTERS

BUSINESS MACHINES (Specify)

SALARY EXPECTED	WHAT LED YOU TO SEEK EMPLOYMENT HERE?

SIGNED ....

Name Section Date

Business Experience and You - Unit - Student Worksheet - Day 4

FORM W-4 (Rev. Aug. 1954)
U. S. Treasury Department
Internal Revenue Service

EMPLOYEE'S WITHHOLDING EXEMPTION CERTIFICATE

Print full name .... Social Security No. ....

Print home address .... City .... State ....

EMPLOYEE: File this form with your employer. Otherwise, he must withhold U. S. income tax from your wages without exemption.

EMPLOYER: Keep this certificate with your records. If the employee is believed to have claimed too many exemptions, the District Director should be so advised.

HOW TO CLAIM YOUR WITHHOLDING EXEMPTIONS

1. If SINGLE, and you claim an exemption, write the figure "1" . . . .
2. If MARRIED, one exemption each for husband and wife if not claimed on another certificate.
   (a) If you claim both of these exemptions, write the figure "2"
   (b) If you claim one of these exemptions, write the figure "1" . . . .
   (c) If you claim neither of these exemptions, write "0"
3. Exemptions for age and blindness (applicable only to you and your wife but not to dependents):
   (a) If you or your wife will be 65 years of age or older at the end of the year, and you claim this exemption, write the figure "1"; if both will be 65 or older, and you claim both of these exemptions, write the figure "2" . . . .
   (b) If you or your wife are blind, and you claim this exemption, write the figure "1"; if both are blind, and you claim both of these exemptions, write the figure "2" . . . .
4. If you claim exemptions for one or more dependents, write the number of such exemptions. (Do not claim exemption for a dependent unless you are qualified under instruction 3 on other side.) . . . .
5. Add the number of exemptions which you have claimed above and write the total . . . . ☐

I CERTIFY that the number of withholding exemptions claimed on this certificate does not exceed the number to which I am entitled.

(Date) ...., 19...... 16—70811-1 (Signed) ....

Form W-4
State Tax Department

STATE OF DELAWARE

EMPLOYEE'S WITHHOLDING EXEMPTION CERTIFICATE

(Collection of Delaware Income Tax at Source on Wages)

Print full name ....Social Security No.............................

Print home address..

HOW TO CLAIM YOUR WITHHOLDING EXEMPTIONS

1. Every taxable is entitled to one exemption. If you claim it, write the figure "1" ________ ________
2. If you are married, one exemption is allowable for wife or husband if spouse does not claim an exemption on a withholding exemption certificate. If you claim the exemption write the figure "1" ________ ________
3. One exemption is allowable for each dependent whose gross income for the calendar year is less than $600.00. ________ ________
4. Additional exemptions for age and blindness:
   (a) If you or your wife will be 65 years of age or older at the end of the year and you claim the exemption write the figure "1"; if both will be 65 or older at the end of the year and you claim both of the exemptions write the figure "2" ________ ________
   (b) If you or your wife are blind and you claim this exemption have the figure "1" written; if both are blind and you claim both of these exemptions, have the figure "2" written ________ ________
5. Add the number of exemptions which you have claimed above and write the total ________ ☐

I CERTIFY that the number of withholding exemptions claimed on this certificate does not exceed the number to which I am entitled.

(Date)..., 19.............. (Signed)...

Answer Sheet

"Business Experience and You"

BE5A
II.

1. 10%
2. 2
3. Approximately $2\frac{1}{2}$ a month
4. 20%
5. $2.50

BE5B

1. $85\frac{1}{2}$ %
2. $99\frac{15}{17}$ %
3. $37\frac{1}{2}$ %
4. $85\frac{5}{7}$ %
5. 100%
6. 150 %
7. $100\frac{1}{9}$ %
8. $16\frac{2}{3}$ %
9. 18 + %
10. 30%

BE6B

2. a. Rate of the following:
commission, interest, discount, increase, etc.

b. commission, interest, discount, increase, etc.

c. price principal, side on which figure rests, number of digits in first collection, whole

d. mark down

e. mark up

f. base

g. installments

h. amount

i. salary, wages

j. damage, thief, product doesn't sell, etc.

k. part ownership

l. statement

m. money or funds on hand

n. planned use of money, budget

o. budgeting, organizing

p. each

q. close approximation, gestimation, estimation

Name　　　　　　　　　　　　　Section　　　　　　　　　　　　　Date

Worksheet #5A

"Business Experience and You"

They saw a number line above the office door that graphed those accepted for employment. It also listed the number of reasons for not accepting those turned down.

The list of reasons for turning so many down held their attention.

I

How many of these can you check positively?

	Yes	No
1. Completely neat and well groomed	___	___
2. Good grammar	___	___
3. Good references	___	___
4. Writing neat and clearly done. Shows planning	___	___
5. Health acceptable	___	___

II

They noticed that about 50 apply each week. The turn over in sales personnel is not great. In spite of this, there was a statement that said, "No fine material is ever turned down!"

1. About 5 a week are accepted. What percent of those applying is this? ____________

2. The store maintains about 100 salesmen. 2% leave a month. How many leave the store each month? ____________

3. Jonathan asked Mr. Zimmerman what happens to those hired that do not stay at this store. Mr. Zimmerman told them some go to other stores in their chain.

   About 50% of those hired go to other stores. How many people go to other stores?____________

4. Frequently one person is kept to allow other clerks additional time off. What percent of those hired is kept for this reason?____

   When someone else is hired for this reason, the former person passes into regular employment.

5. Mr. Zimmerman said if a clerk made more than usual sales for his department, he often could be paid a commission on the over sales. If Jonathan sold 10 pairs of pants more each day for a week than usual at $.25 commission each. How much commission would he make? (Remember he only works there Saturdays and Sunday)

Name Section Date

Worksheet #5B

"Business Experience and You"

Practice Examples:

Find the following

Teacher samples

a. What percent of 5 is 2? (Part divided by the whole=per
2÷5 = .40 and therefore = 40%

(To change a decimal to a percent, move the decimal point two places to the right and add a percent sign.)

b. 7 is what percent of 28? (Part divided by the whole= %
7 ÷ 28 = .25 or 25%

1. 7 is what percent of 8?
2. What percent of 72 is 60?
3. What percent of 96 is 36?
4. 48 is _______percent of 56?
5. What % of 32 is 32?
6. 12 is_______% of 8?
7. What percent of 180 is 200?
8. $2\frac{1}{2}$ is what percent of 15?
9. $.15 is what percent of $.76
10. What % of $3 is $.90?
11. $13 is _____% of $16.25 = 16.25 $\overline{)13.00}$ = ?
12. What percent of 100 is 67? 67 ÷ 100 = ?
13. 23 is _____% of 25? 23 ÷ 25 = ?
14. What % of 20 is 11? 11 ÷ 20 = ?
15. $12 is _____% of $400? 12 ÷ 400 = ?

Name Section Date

Worksheet #6A

"Business Experience and You"

How are we doing so far?

Practice examples for better students (A) Recall your law
$w = \frac{p}{r}$ (changed to decimal)

Finding the missing number:

1. 18 % of what number is 72?
2. 35% of what number is 28?
3. 60% of what number is 27?
4. 6% of what number is 75?
5. 45% of what number is 45?
6. 100% of what number is 45?
7. 125% of what number is 105?
8. 23% of what number is 170.2?
9. $4\frac{1}{2}$ % of what number is 135?
10. $3\frac{1}{4}$ % of what number is 13?
11. .2% of what number is 3?
12. $\frac{1}{2}$% of what number is 40?
13. 35% of what number is 224?
14. 85% of __________ is 17?
15. 18 is 75% of what number?
16. $33\frac{1}{3}$ of what number is 38?
17. 52 is 4% of what number?
18. 26% of what number is 26?

Name Section Date

Worksheet #6B

"Business Experience and You"

1. In each of the problems on the preceding page, write a formula for finding the answer to each of the problems.

2. Give some other names for the following:

   a. percent

   b. percentage

   c. base

   d. discount

   e. increase

   f. whole

   g. payments

   h. total

   i. pay

   j. losses

   k. stock

   l. record of payments

   m. cash

   n. staying within ones means

   o. planning

   p. per

   q. rounding off

Answer Sheet

"Business Experience and You"

BE7

1. 3
2. 2
3. 9%
4. 95%
5. $7.99
6. $26.25
7. 12½%
8. $4.75
9. $63.16
10. 25%
11. $12.50

BE8

1. $75
2. $2.50
3. $2.96
4. $12.50
5. $40.50
6. $58; $62.50
7. $71,750; $22.92

Name Section Date

Worksheet #7

"Business Experience and You"

Lynn and Jonathan found out that each department of Wilmington Dry Goods is self supporting. That all sales, credits, losses, etc. are charged to each department to which they belong. They were so interested in being able to do well, they found a book on business with examples similar to those they may have to work in order to get ahead with the company:

Write your answers on the lines at the right. Do your figuring on the back of this page. Add additional worksheets of your own paper if you need them.

1. How many mistakes out of a possible 15 chances can a student get wrong and still get a grading of 80%?____________
2. If 95% of the young salesmen of a class of 40 were hired, how many students were not hired?___________
3. Mr. Williams saved $288 from his annual income of $3,200. What percent of his income did he save?
4. During the work year Tom was absent 9 days and was present 171 days. What percent of the time he worked, was he present?_____
5. What is the cost of a pair of shoes marked $8.50 if a discount of 6% is allowed?__________
6. Mr. Smith bought rugs for $675. He paid 30% in cash. If the balance is to be paid in 18 equal monthly installments, how much must hepay each month?_________
7. What percent was a piano reduced if it was marked $600 and sold for $525?___________
8. A hand bag with a 20% tax included sells for $5.70. What is the selling price of the bag without the tax?_________
9. A salesman receives $28 per week and 4% commission on all sales. What are his earnings if his weekly sales are $879?____________
10. The Dry Goods team won 18 games and lost 6. What percent of the games played did they lose?
11. Mrs. Meade saved $1.25 by buying a blanket at a reduction of 10%. What was the regular price?___________

Name Section Date

Worksheet #8

"Business Experience and You"

1. Jonathan sold 15 pairs of pants Saturday for $5 each. How much money did he take in?

2. He made a bonus of 10% of the profit on each pair of the pants over 10 pairs sold. The pants cost the store $\frac{2}{3}$ of the price.

   How much bonus did he make that day? ____________

3. Jonathan was not happy with his income for the day. He encouraged his friends to buy good pants that were on special sale on Sunday. They were the best stay-pressed pants. They sold for $2.99 a pair or 2 pairs for $5.50. 8 of his friends bought pants at 2 pairs each. 7 bought 1 pair each. How much was his profit for that day?____________

4. Lynn worked five days that week after school. She sold 30 dresses at $7. each. The assorted ties were not necessary for the dresses, but could be bought for $.50 a piece she sold a tie with each dress. In the dress department, the sales girls get a bonus of 10% of all sales over a $100 a week. What did Lynn make in bonuses that week?__________

5. When the clerks buy for themselves, they get a 10% discount on all the things they buy in the store. Lynn needed a winter coat. She looked for the best she could find for the money. Her decision was one marked $45.
   a. How much did she pay for the coat?________

   b. What was her discount?__________

6. She decided she needed new shoes and a hat to go with her coat. The hats were $5. The shoes were exceptionally fine and marked $12.50. What was her total bill? Remember they get a 10% discount.____________What was the original price?__________

7. The department sold 10,250 dresses at $7 each last month. How much money was taken in?__________

   How much money did the girls average in bonuses if there were 30 girls and they averaged 300 sales?__________

   Remember their bonus does not start until they have made over $100 in sales. Their bonus is 10% of all sales over $100. (Their pay is small other than the bonuses they make and wage per hour averages $1.25)

Name Section Date

Worksheet #9

"Business Experience and You" Oral Review

1. What facts must you know before you can figure income?_____

2. What are the number of days in each month of the year?_____

3. How much money would they have in savings by the end of the year, if they made all of the regular payments of $2 per week throughout the year?__________

4. Suppose their parents matched everything they put in the bank for savings. What would each have then for savings at the end of the year?__________

5. What do we call the process of checking money received against money paid out?

6. How do we find average?

7. How do we check by casting out 9's in the 4 fundamentals?

8. What did we call the value of the pants Jonathan tore?

9. How would they label the cost of carfare?

10. When they looked over the ads in the paper, what were they actually doing? Did it help? How?

11. Why did they decide on the Wilmington Dry Goods as the store for them to both work and buy their clothing?

12. How do we change a percent to a decimal?

13. What is percentage and how is it found?

14. What are some of the reasons discount is used? How is it found?

15. Why do you suppose each department is independent of the other? Is it better or worse to have it that way?

16. What effect do you suppose having a team had on sales?

17. The Wilmington Dry Goods is a chain of stores. How does this help the business become more profitable?

18. How do we find a part when rate and whole are known?

19. How do we use the term balancing in mathematics? (budget, check book, store department accounts, seesaw, etc.) Lets discuss these.

Name Section Date

Worksheet #10

"Business Experience and You"

1. If +$40 means a gain of $40 in a transaction, what does -$60 mean?

2. If -3% represents a decrease of 3% in the cost of living, what does +1% mean?

3. If 18' above normal represents an increase of sales and is shown as +18, how can 6' below normal sales be shown?

4. If a deficiency of 2.45 inches rainfall effects the store sales and is shown as -2.45, how can an excess of .25 be shown?

5. If -85 pounds represents a downward force of 85 pounds, what does +39 pounds represent?

6. If 75' indicated 75' north latitude, what does -16' indicate?

7. If an inventory shortage of 45 items is represented by -45 items, how can 28 items over be shown?

8. If the assets of a business amounting to $5,290 is shown as +5,920, how do we show a loss of $1,398?

9. If +6 employees means an additional 6 people hired, what does -4 mean?

Addition

1. $+8 + 3 =$
2. $-7 -9 =$
3. $+7 - 3 =$
4. $-13 + 6 =$
5. $+26 - 18 =$
6. $+4 - 4 =$
7. $0 + 9 =$
8. $+\frac{1}{2} - \frac{1}{4} =$
9. $-3.94 - 1.06=$
10. $+3x + 2x =$
11. $1 + 6 - 7 + 4 =$
12. $3 - 10 + 3 - 5=$
13. $4 - 9 + 2 - 3=$
14. $6 - 2 + 3 - 10=$
15. $-5 + 1.8 - 2 =$

1. Lynn saved $25 in 9 weeks. At that rate how long will it take her to save $175?

2. Find the value of W_2 if $W_1 = 25$, $d = 5$, $d_2 = 1$. (referring to our unit on Science)

3. Define: balancing in two or more different ways.